



# MANAPPURAM FOUNDATION

(CSR Body of Manappuram Finance Limited)

(A Public Charitable Trust Registered under  
Section 12AA (1) (b) (i) of the Income Tax Act 1961)

Managing Trustee  
VZ Nandakumar  
(Chairman, Manappuram Group)

17/05/2016

## CERTIFICATE


Trustees  
Sooraj Nandan  
Jyothi Prasanna


This is to certify that **Mr. Amal Chandran**, 4<sup>th</sup> semester BSW student of Christ College, Irinjalakuda, Thrissur has successfully completed Block Placement at Manappuram Foundation from 1<sup>st</sup> April 2016 to 30<sup>th</sup> April 2016.

Secretary  
N.R. Bahuleyan

Mr. Amal Chandran's initiatives and enthusiasm especially coordinating Summer Camp for children was highly appreciable. He was found proactive and willing to work hard to complete the assigned responsibilities. He gained useful information about the projects and programmes of Manappuram Foundation- CSR body of Manappuram Group

Manappuram Foundation wishes all success to Mr. Amal Chandran for all his future endeavours.

  
Field Work Supervisor  
(Jasna V.R- Dy Manager)  
Manappuram Foundation

  
Dr. Shibu Shankaran  
CEO,  
Manappuram Foundation





Fr. Dr. Jolly Andrews

Assistant Professor  
In-charge of Principal

Christ College (Autonomous)  
Irinjalakuda

## GERIZIM REHABILITATION TRUST

(Registered under Karnataka Charitable Act. Regn. No. : 321 / 1990 - 91 dt.23.08.1990)

Head Office:

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Viveknagar, Bangalore -5600 47  
Karnataka State, South India



Tel: 080- 2571 2015, 2571 3201

E-Mail: gerizimhelp@gmail.com

Web Site: www.gerizimhome.com

A Charitable Institution

FOUNDER: G.J. Yesudian M.A., B.Ed., D.S.S.D.H.

TREASURER / PRINCIPAL: Indira Yesudian B.A., M.Ed., D.S.E.

DIRECTOR: Joseph Ponraj

SECRETARY: S. Geetha Bai B.Com

Date: 21<sup>st</sup> December 2019

To,

The Head of the Department  
Department of Social Work  
Christ College (Autonomous) Irinjalakuda  
Irinjalakuda North, Thrissur Dist., Kerala - 680 125.

### Exposure - Interns - Department of Social Work - Christ College (Autonomous) Certificate - Active Involvement - Rahul Nelson M D - Final Year BSW

This does serve to inform you kindly that your bonafide students (final year BSW) - **Rahul Nelson M D**, has undergone his field work training at our Institution from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 for 20 days as required of them.

During the course of their practical exposure, they have involved to fulfill their objectives to an extent.

01. Opportunities provided to practice their spoken English.
02. Chances given to develop their communication skill to express their mind in words/actions to be an effective social work.
03. Dealt directly with the mentally challenged children in our organization.
04. Learnt to adjust with the existing situation while reaching out to needy people around on social service.
05. Engaged keenly to improve upon their personality.

As a part of the program, they took time to understand the mindset/background of the special children, occupied them to refresh their minds & target them simple domestic skills.

They cooperated well with our management & their rapport with our staff was congenial. We wish him well for bright career.

Joseph Ponraj  
Director



Fr. Dr. Jolly Andrew  
Assistant Professor-  
In-charge of Principa  
Christ College (Autonom  
Irinjalakuda

## International Conference On Employment Opportunities in the field of Social Science



**SAROVARAM**  
Center for Promotion of  
National Integration and  
Community Development



NEHRU YUVA KENDRA  
Ministry of Youth Affairs and Sports



**DEPT. OF SOCIOLOGY**  
UNIVERSITY OF KERALA  
Thiruvananthapuram

### CERTIFICATE OF PARTICIPATION

This is to certify that Prof./ Dr./ Mr./ Ms./ Mrs.

*Ajsal Abbas*

has participated in the *International Conference On Employment Opportunities in the field of Social Science* jointly organized by **Sarovaram** Center for the Promotion of National Integration and Community Development, **Nehru Yuva Kendra**, Thiruvananthapuram and **Dept. of Sociology**, University of Kerala Thiruvananthapuram, held on 13, 14, 15 and 16 February 2021.

**Chairperson**  
SAROVARAM, Kerala

**District Youth Officer**  
Nehru Yuva Kendra, Thiruvananthapuram,  
Kerala

**Organising Secretary**  
Dept. of Sociology,  
University of Kerala.



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# SOCIAL ACTION FORUM IRINJALAKUDA

Cathedral Junction West, Irinjalakuda - 680 121, Kerala, INDIA.

Fr. Jose Manjaly, Executive Director

Mob: 9495811894, Tele: 0480 - 2821986

Phone (Office): 0480 2828990, 2821975, 2834144

Website: www.safik.org

e-mail: socialactionirj@gmail.com

Chairman

Fr. Rev. Dr. Pauly Kanneethan

President

V. Rev. Msgr. Anto Thachil

Associate Directors

Fr. Sunny Kalampanathodathil

Fr. Enoy Kozhappatt & John Paul Iyvanam

## CERTIFICATE

This is to certify that *Mr. Amal Chandran M.C.*, student of 4<sup>th</sup> semester BSW from Christ College Irinjalakuda successfully completed 20 days field work at Social Action Forum, Irinjalakuda. He gained experience and knowledge from different spectrums of Social Work intervention of SAFI and by interaction with the people in various communities and Departments.

During his tenure, he conducted, and participated in the following programmes:-

- ❖ Organised central meeting of Save A Family beneficiaries and lead class on 'the significance of education in the modern scenario.'
- ❖ Visited all the operational areas of SAFI like Ashanilayam & Kripa Bhavan (special School & Hostel), Prakruthi Agricultural Nursery, Sanjo Sadan Ayurvedic Integrated Rehabilitation centre for Addicts, Sanjo Industrial training and Production centre
- ❖ Visited and worked in Abhaya Bhavan, home for the permanently disabled persons and took care of the needs of the inmates.
- ❖ Strengthening of Spinsters group at Karalam and Edathuruthy.
- ❖ Took great initiative for the implementation of CBR project, Enabling Environment Activities for the parents of CWDs residing in and around Aloor, Velukkara, Vellangallur, Poomangalam, Puthenchira, Eriyad, Methala, Mathilakam Grama Panchayaths Kodungallur and Irinjalakuda Municipality
- ❖ Collected data of differently abled children from different ICDS offices, Anganawadies Municipalities and Grama Panchayaths.
- ❖ Conducted group games for the Bhalabhavan childrens as part of Promotion and protection of child rights projects.

He was very active and responsible in all the field activities undertaken. We wish great success in his future endeavors.

*Fr. Jose Manjaly*

Fr. Jose Manjaly

6-04-2016

Irinjalakuda



Executive Director **Fr. Dr. Jolly Andrews**

Assistant Professor-in-charge of Principal Christ College (Autonomous) Irinjalakuda

The Official Organization of the Diocese of Irinjalakuda for Social Action  
Charitable Society Reg. No. 168/83, FCRA Reg. No. 11183/04, PAN: AAB75445P, TAN: CHNS02897C  
Income Tax 12A Regn.: C.No. 11183/04, PAN: AAB75445P, TAN: CHNS02897C  
SSI Reg. No. 09/09/05470186, C.S.T. No. 25016105 of 16/3/10, VAT No. 32080225625  
PWD REG. 555/10/2013 (Renewed) dt. 12.11.2013, National Trust Reg. No. 130217231931022/MR/CI/Autonom/MD Dt. 5.3.2012

50  
YEARS



SOS CHILDREN'S  
VILLAGES  
INDIA

A loving home for every child

## TO WHOMSOEVER IT MAY CONCERN

Aswani AS studying 3rd year BSW in Christ College, Irinjalakuda has successfully completed her internship from 3<sup>rd</sup> December 2019 to 23<sup>rd</sup> December 2019 in SOS Children's Village, Puducherry. The intern undertook various significant tasks carried out in our project and was involved in important documentation within the organisation. We wish her best for all her future endeavours.

  
Purusharth Singh  
Village Director





3 / 4

Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

SOS Children's Village  
Pillayaruppam Post  
Bahour Commune  
Puducherry 607 402  
India

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India

T +91-11-43239200  
F +91-11-43239292  
soscvi@soscvindia.org  
www.soschildrensvillages.in

## International Conference On Employment Opportunities in the field of Social Science



**SAROVARAM**  
Center for Promotion of  
National Integration and  
Community Development



**NEHRU YUVA KENDRA**  
Ministry of Youth Affairs and Sports  
GOVERNMENT OF INDIA



**DEPT. OF SOCIOLOGY**  
UNIVERSITY OF KERALA  
Thiruvananthapuram

### CERTIFICATE OF PARTICIPATION

This is to certify that Prof./ Dr./ Mr./ Ms./ Mrs.

*Airin Joy*

has participated in the *International Conference On Employment Opportunities in the field of Social Science* jointly organized by **Sarovaram** Center for the Promotion of National Integration and Community Development, **Nehru Yuva Kendra**, Thiruvananthapuram and **Dept. of Sociology**, University of Kerala Thiruvananthapuram, held on 13, 14, 15 and 16 February 2021.

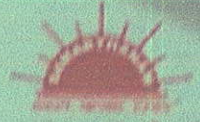
**Chairperson**  
SAROVARAM, Kerala

**District Youth Officer**  
Nehru Yuva Kendra, Thiruvananthapuram,  
Kerala

**Organising Secretary**  
Dept. of Sociology,  
University of Kerala.



**Fr. Dr. Jolly Andrew**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Lekshmi Priya T U pursuing BSW from Christ College, Irinjalakuda has volunteered with Samarthanam Cochin branch from 2<sup>nd</sup> December to 30<sup>th</sup> December 2019 and completed 20 days of service.

While in Samarthanam she worked in livelihood resource center. The main role assigned to her was job placement support where she contacted many prospective recruiters to place the students undertaking the course. She has taught students basic about innovation and need to update themselves with industry required skills as a part of national education day, then she conducted a one-hour training on presentation skills and how to improve the presentation skills. She helped with the presentations and idea generation on improving the visibility and awareness about the course. We found her sincere throughout the whole period and wish her all the best for her future endeavors.

This organization is a registered NGO working towards the empowerment of persons with disabilities, and underprivileged people through various developmental initiatives focusing on educational, social, economic, cultural and technological aspects and to create an inclusive and indiscriminate society for them.

Joy Antony

Lead- LRC Kochi

30.12.2019



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



## Centre for Information and Guidance India (CIGI)

(Reg. Under Societies Registration Act, XXI of 1860 - Donations exempted u/s 80 G of Income Tax Act.)  
Golf Link Road, Chevayur, Calicut-673 017. Ph: 0495- 2351377, 2351368  
www.cigi.org. E-mail: cighq@cigi.org. cighq@gmail.com

10-05-2016

### To whomsoever it may concern

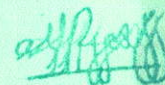
This is to certify that **SEBILA FATHIMATHUL SUHRA M.S**, a IV<sup>th</sup> Semester BSW student of Christ College, Irinjalakuda, Thrissur has completed her block placement training, as a part of her studies, in this organisation from 4<sup>th</sup> April to 9<sup>th</sup> May 2016. During this period she has familiarized with, Child Development Activities, Youth and Women Development Activities, Human Resource Development, Health Awareness Programme, Programme Coordination, Effective Communication and Self Help Group Formation.

She is disciplined and hard working. Her character and conduct were very good.

  
Director

CIGI







**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

50  
YEARS



SOS CHILDREN'S  
VILLAGES  
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## TO WHOMSOEVER IT MAY CONCERN

**Jesna CY** studying 3rd year BSW in **Christ College, Irinjalakuda** has successfully completed her internship from **3<sup>rd</sup> December 2019** to **23<sup>rd</sup> December 2019** in **SOS Children's Village, Puducherry**. The intern undertook various significant tasks carried out in our project and was involved in important documentation within the organisation. We wish her best for all her future endeavours.

Purusharth Singh

Village Director



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

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[soscv@soscvindia.org](mailto:soscv@soscvindia.org)  
[www.soschildrensvillages.in](http://www.soschildrensvillages.in)

50  
YEARS



SOS CHILDREN'S  
VILLAGES  
INDIA

A loving home for every child

## TO WHOMSOEVER IT MAY CONCERN

Jesna CY studying 3rd year BSW in Christ College, Irinjalakuda has successfully completed her internship from 3<sup>rd</sup> December 2019 to 23<sup>rd</sup> December 2019 in SOS Children's Village, Puducherry. The intern undertook various significant tasks carried out in our project and was involved in important documentation within the organisation. We wish her best for all her future endeavours.

Purusharth Singh

Village Director



Fr. Dr. Jolly Andrews  
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In-charge of Principal  
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# Anokha gen. n. (Hymenoptera: Platygastroidea: Scelionidae) and two new species from India

Article · September 2017

DOI: 10.5281/zenodo.897803

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Some of the authors of this publication are also working on these related projects:



Taxonomy and ecology of selected genera of braconid wasps from India [View project](#)



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Assistant Professor-  
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# CHILDLINE Thrissur



26/03/2016

## CERTIFICATE

### "TO WHOM SO EVER IT MAY CONCERN"

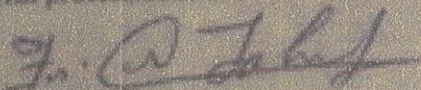
This to certify that Ms. SEBILA FATHIMATHUL SUHRA M.S 4<sup>th</sup> semester BSW student from Christ College, Irinjalakuda, Thrissur has efficiently and effectively served at CHILDLINE, Thrissur from 1<sup>st</sup> January 2016 to 25<sup>th</sup> March 2016 as a part of their Concurrent Field Work.

During the tenure he gained experience in the following fields:

- Assist CHILDLINE team to conduct case enquiries and home studies
- Engaged in CHILDLINE special programmes and outreach activities
- Participated in CHILDLINE awareness programme
- Assist CHILDLINE team in documentation process
- Participated in CHILDLINE Open House
- Assist CHILDLINE team to conduct school awareness programmes in different schools
- Arranged CHILDLINE Club follow up meetings

This is to further certify that the CHILDLINE 1098 service is a 24 hours helpline phone outreach service for children in need of care and protection. It is supported by the Union Ministry of Women and Child Development and linking with various NGOs.

During the period of his service, I found him sincere, pleasant, and cooperative with professional attitude. We wish him all the best in his future career.

  
Fr. Johnson Chalissery  
Director, collaborative organization  
CHILDLINE, Thrissur

COLLABORATIVE ORGANISATION  
ST. CHRISTINA HOME,  
PULLAZHI, THRISSUR - 680 012



  
Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College Autonomous  
Irinjalakuda

COLLABORATIVE ORGANISATION  
CHRIST COLLEGE,  
CHEROOR, THRISSUR - 680 009

"A project of the Ministry of Women and Child Development (G.O.I) in partnership with State Government, NGOs, Corporate sector and concerned individuals"



# Pondicherry Multipurpose Social Service Society

(Regd. No : 6/77)

#81, Laporte Street, Puducherry - 605 001. Ph : 0413-2222928, Fax : 0413-2222982  
Email : pmssspondy@hotmail.com, pmssspondy@gmail.com, Web : www.pmsss.org.in  
director.pmsss@gmail.com, Mobile No: 9597555211

**Most. Rev. Dr. Antony Anandaryar, D.D.,D.C.I.,**  
President

**Fr. C. Joseph Arumaiselvam**  
Secretary / Executive Director

**Date: 20.12.2019**

## CERTIFICATE

This is to certify that Miss. Hridhya. E.H studying 3<sup>rd</sup> Year B.S.W in Christ College, Irinjalakuda, Thrissur, Kerala has undergone her Social Work learning and Field Work practices in our Organization (PMSSS) from 02-12-2019 to 21-12-2019. The Trainee had completed her learning and practices successfully. During her Field Work the trainee was punctual and sincere in her assignments.

We wish him all the best.

(Fr. C. Joseph Arumaiselvam)  
Executive Director.



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/319997571>

# Anokha gen. n. (Hymenoptera: Platygastroidea: Scelionidae) and two new species from India

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University of Calicut

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Taxonomy and ecology of selected genera of braconid wasps from India [View project](#)



Virus mass production [View project](#)



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Assistant Professor-  
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# CHILDLINE

## Thrissur



30/10/2015

### CERTIFICATE

#### "TO WHOM SO EVER IT MAY CONCERN"

This to certify that Mr Devaraj K S fourth semester BSW student from Christ College, Irinjalakuda, Thrissur has efficiently and effectively served at CHILDLINE, Thrissur from 12<sup>th</sup> June 2015 to 30<sup>th</sup> October 2015 as a part of their Concurrent Field Work.

During the tenure he gained experience in the following fields

- Assist CHILDLINE team to conduct case enquiries and home studies
- Engaged in CHILDLINE special programmes and outreach activities
- Participated in CHILDLINE awareness programme
- Assist CHILDLINE team in documentation process
- Participated in CHILDLINE Open House
- Help to create Vulnerability mapping
- Assist CHILDLINE team to conduct school awareness programmes in different schools

This is to further certify that the CHILDLINE 1098 service is a 24 hour free emergency phone outreach service for children in need of care and protection. This is a project supported by the Union Ministry of Women and Child Development and linking state Governments and NGOs.

During the period of his service, I found him sincere, pleasant, open to challenge and dedicated with professional attitude. We wish him all the best in his future career endeavor.

Fr. Jose Konikkara  
Director, collaborative organization  
CHILDLINE, Thrissur

**COLLABORATIVE ORGANISATION**



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

**NODAL ORGANISATION  
VIMALA COLLEGE**



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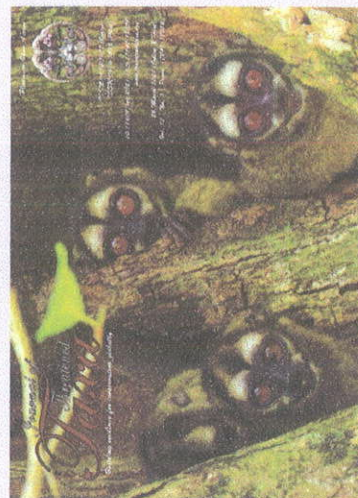
## COMMUNICATION

### DRAGONFLIES AND DAMSELFLIES (INSECTA: ODONATA) OF THE KOLE WETLANDS, CENTRAL KERALA, INDIA

A. Vivek Chandran, Subin K. Jose & Sujith V. Gopalan

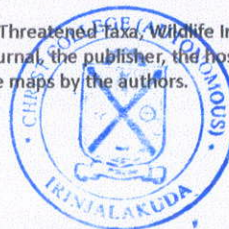
26 March 2021 | Vol. 13 | No. 3 | Pages: 17963–17971

DOI: 10.11609/jott.5885.13.3.17963-17971



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 & former Principal  
 Christ College (Autonomous)  
 Irinjalakuda  
  
**ZOOREACH**  
 Threatened Taxa

# ATTAPPADY SOCIAL SERVICE ORGANISATION



Reg. No - 53/88

**ASSO BHAVAN, PAKKULAM**

Thavalam P.O. - 678 582, Palakkad Dt., Kerala

Ph : 04924 - 253237, 263462,

E-mail : assoattappady@rediffmail.com, assoattappady@gmail.com

Date - 04-05-2016

## Experience Certificate

This is to certify that Ms. Athira M ( BSW Student, Christ College Irinjalakuda) has successfully completed her one month Block Placement in our Organisation from 4<sup>th</sup> April 2016 to 3<sup>rd</sup> May 2016 . She mainly worked in the NABARD Integrated Tribal Development Project at Agaly Grama Panchayath. She visited different hamlets and organized students for conducting camps. She is hardworking, responsible and sincere.

Wishing her all the success in her future endeavors.

Mr. Manoj Mathukaran

Executive Secretary, ASSO

EXECUTIVE SECRETARY

Attappady Social Service Organisation (ASSO)

Phone No - 253237

ASSO BHAVAN, PAKKULAM

Thavalam P.O. - 678 582

Palakkad Dt., Kerala



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# PUNARJANI

CHARITABLE TRUST FOR DE-ADDICTION & REHABILITATION

Reg. No. 217/2004

POOMALA P.O, Thrissur, Kerala Pin : 680 581

Phone: 0487-2201015, 9747201015, 9744830474, 8281478832, Web: www.punarjani.org, E-mail: punarjanipoomala@yahoo.com

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms. ANUPAMA. P S, D/o. Sajeevan P A, final year student of B.S.W (Roll No: CCARBSW002), Christ College Autonomous, Irinjalakuda, India, has under gone for field work from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 at this institution. During the period of her field work, she was found punctual, hardworking and inquisitive.

We wish all success in her future endeavor.

Poomala

21/12/2019

Dr. Johns K. Mangalam, Ph.D., LLB

Reg. No: 217/2004  
Poomala, P.O.  
Thrissur

Managing Director.



Fr. Dr. Jolly Andrews

Assistant Professor-  
in-charge of Principal

Christ College (Autonomous)



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## A Safer, Wide-Temperature Liquefied Gas Electrolyte Based on Difluoromethane

Daniel M. Davies<sup>a</sup>, Yangyuchen Yang<sup>b</sup>, Ekaterina S. Sablina<sup>a</sup>, Yijie Yin<sup>b</sup>, Matthew Mayer<sup>b</sup>, Yihui Zhang<sup>a</sup>, Marco Olguin<sup>a</sup>, Jungwoo Z. Lee<sup>c</sup>, Bingyu Lu<sup>a</sup>, Dijo Damien<sup>f</sup>, Oleg Borodin<sup>c,d,\*\*\*</sup>, Cyrus S. Rustomji<sup>e,\*\*</sup>, Y. Shirley Meng<sup>a,b,g,\*</sup>

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<sup>b</sup> Materials Science and Engineering, University of California San Diego, La Jolla, CA, 92121, USA

<sup>c</sup> Electrochemistry Branch, Sensors and Electron Devices Directorate, U.S. Army Research Laboratory, Adelphi, MD, 20783, USA

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<sup>e</sup> South 8 Technologies, Inc., San Diego, CA, 92109, USA

<sup>f</sup> Christ College Irinjalakuda, Kerala, 680125, INDIA

<sup>g</sup> Sustainable Power and Energy Center (SPEC), University of California San Diego, La Jolla, USA

### HIGHLIGHTS

- Demonstration of unique safety feature inherent to liquefied gas electrolytes.
- Low flammability, difluoromethane based solvent enables wide temperature operation.
- Raman spectroscopy reveals few free co-solvent molecules and high salt aggregation.
- MD simulations compliment experimental results with insight into Li<sup>+</sup> transportation.
- Li<sub>2</sub>Cu plating/stripping and full cells operational through a wide temperature range

### ARTICLE INFO

#### Keywords:

Safety  
Liquefied Gas Electrolyte  
Solvation Structure  
Lithium Metal

### ABSTRACT

Development of safe electrolytes that are compatible with both lithium metal anodes and high-voltage cathodes that can operate in a wide-temperature range is a formidable, yet important challenge. Recently, a new class of electrolytes based on liquefied gas solvents has shown promise in addressing this issue. Concerns, however, have been raised on the pressure, flammability and low maximum operating temperature of these systems. Here, we endeavor to mitigate safety and practicality concerns by demonstrating an enhanced safety feature inherent in liquefied gas electrolytes and by showing the viability of using difluoromethane as a liquefied gas solvent which has lower pressure, lower flammability, and improved maximum operation temperature characteristics compared with fluoromethane. We create a custom-built setup to enable liquefied gas electrolyte characterization through Raman spectroscopy and supplement this with molecular dynamics (MD) simulations. The electrolyte shows good conductivity through a wide temperature range and compatibility with both the lithium metal anode and 4 V class cathodes. The demonstrated use of such alternative liquefied gas solvents opens a path towards the further development of high-energy and safe batteries that can operate in a wide-temperature range.

### 1. Introduction

Batteries are ubiquitous today in a vast number of applications. They

vary greatly in size and application, from portable electronics to providing energy storage for grid reliability and resiliency. The front running chemistry for a number of these applications is the

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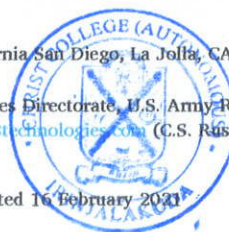
E-mail addresses: [oleg.a.borodin.civ@mail.mil](mailto:oleg.a.borodin.civ@mail.mil) (O. Borodin), [crustomji@south8technologies.com](mailto:crustomji@south8technologies.com) (C.S. Rustomji), [shmeng@ucsd.edu](mailto:shmeng@ucsd.edu) (Y. Shirley Meng).

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NISH: CERT/HR/EXP/2015-16

Date: 14.06.2016

**INTERNSHIP CERTIFICATE**

**To whomsoever it may concern**

- |                                    |  |
|------------------------------------|--|
| 1. Name                            | Ms. Chandana Bhadran   |
| 2. Designation                     | Intern – BSW   |
| 3. Department                      | Department of Audiology & Speech Language Pathology  |
| 4. Period of Association with NISH | From: 25 <sup>th</sup> April 2016 to 28 <sup>th</sup> May 2016                               |
| 5. Duties handled/tasks assigned   | Assisted in the co-ordination of clinics, Observation visits in various departments in NISH. |
| 6. Type of work                    | Internship   |
| 7. General Comment if any          | Sincere, dedicated and hardworking   |

  
Dr. Samuel N. Mathew  
Executive Director





Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Inrijaikuda


21<sup>st</sup> December 2019

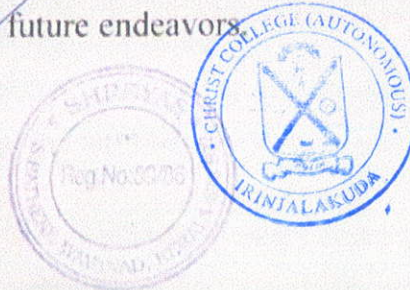
## TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. Ashish Manohar** from **Christ College Irinjalakuda (Autonomous), Thrissur** has successfully completed his 20 days field work at Shreyas, Sulthan Bathery, Wayanad from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019. During the internship, he got opportunity to familiarize himself with different departments and community development initiatives of Shreyas and practice social work methods. He did following activities during his placement very sincerely and efficiently.

- Learned Administrative Structure and Organizational Profile
- Conducted training programme and sports meet for tribal community
- Conducted group work
- Coordinated Recovery activities for the victims of Kerala Floods 2018
- Prepared Case Study and practised Case Work
- Documentation of the programmes
- Conducted social experiment and collective action
- Organized street play
- Participated in the 4 tier evaluation process of Shreyas

We wish all success in his future endeavors

  
Adv. Fr. Benny Edayath  
Executive Director







Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

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# Corrigendum to “Coconut inflorescence sap enhances exercise performance and plasma antioxidant status in young active men” [NFS Journal 23 (2021) 37–43]

Ashish Joseph <sup>a</sup>, Svenia P. Jose <sup>b</sup>, Bintu T. Kalyan <sup>c</sup>, Renny R. Mammen <sup>d</sup>, I.M. Krishnakumar <sup>d</sup>, Bradley S. Fleenor <sup>e</sup>, Ratheesh Mohan <sup>b</sup>  

- <sup>a</sup> Department of Physical Education, St. Thomas College, Pala, Kottayam, Kerala, India
- <sup>b</sup> Department of Biochemistry, St. Thomas College, Kottayam, Kerala, India
- <sup>c</sup> Department of Physical Education, Christ College, Thrissur, Kerala, India
- <sup>d</sup> R&D Centre, Akay Natural Ingredients Pvt. Ltd., Cochin, Kerala, India
- <sup>e</sup> Human Performance Laboratory, Ball State University, Muncie, IN 47306, United States of America



Available online 13 May 2021.



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**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

PRATHEEKSHA BHAVAN IRINJALAKUDA

CERTIFICATE

Miss. Athira M 3<sup>rd</sup> year Bachelor of social work student, Christ college Irinjalakuda, Thrissur (Dist) successfully completed her 20 days concurrent field placement as a part of her curriculum at Pratheeksha Bhavan Special school Irinjalakuda from 1/1/2016 to 1/6/2016

The trainee has also been able to acquire an understanding of the agency and the functioning of it. She has been very effective in carrying out tasks and also responsibilities

*[Handwritten signature]*  
*[Handwritten name]*

PRINCIPAL  
Pratheeksha Training Centre  
Christ Nagar, Irinjalakuda - 686

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DIRECTOR: Joseph Ponraj

SECRETARY: S. Geetha Bai B.Com

Date: 21<sup>st</sup> December 2019

To,

The Head of the Department  
Department of Social Work  
Christ College (Autonomous) Irinjalakuda  
Irinjalakuda North, Thrissur Dist., Kerala – 680 125.

### Exposure - Interns - Department of Social Work - Christ College (Autonomous) Certificate - Active Involvement - Ananthkrishnan K S - Final Year BSW

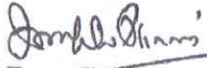
This does serve to inform you kindly that your bonafide students (final year BSW) - **Ananthkrishnan K S**, has undergone his field work training at our Institution from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 for 20 days as required of them.

During the course of their practical exposure, they have involved to fulfill their objectives to an extent.

01. Opportunities provided to practice their spoken English.
02. Chances given to develop their communication skill to express their mind in words/actions to be an effective social work.
03. Dealt directly with the mentally challenged children in our organization.
04. Learnt to adjust with the existing situation while reaching out to needy people around on social service.
05. Engaged keenly to improve upon their personality.

As a part of the program, they took time to understand the mindset/background of the special children, occupied them to refresh their minds & target them simple domestic skills.

They cooperated well with our management & their rapport with our staff was congenial. We wish him well for bright career.

  
Joseph Ponraj  
Director



  
Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# CHRIST VIDYANIKETHAN

(Affiliated to CISCE, Reg.No. KE082/2003)

IRINJALAKUDA - 680 125

Email : christvidyanikethan@yahoo.co.in

☎ : 0480 - 2830894

17 August 2016

To

The Principal

Christ College,

Irinjalakuda

Sir,

Sub : Completion Certificate and Attendance Report.

Mr. Mijo B J - Internship Trainee under Internship Programme for B. P. Ed students has completed the internship programme on 16 August 2016.

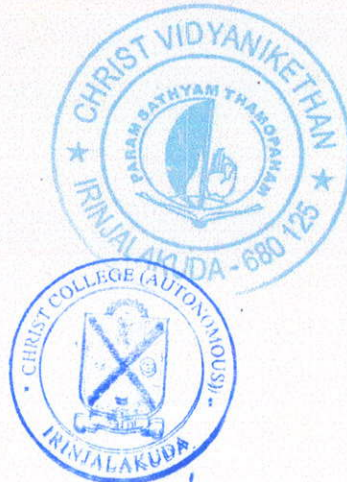
He was present on all working days of this Institution from 11 June 2016 to 16 August 2016.

Thanking you,

Yours faithfully,

Principal

**FR. JACOB NJERINJAMPILLY**  
PRINCIPAL  
CHRIST VIDYANIKETHAN  
IRINJALAKUDA-680125, THRISSUR, KERALA



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Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
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# Corrigendum to “Coconut inflorescence sap enhances exercise performance and plasma antioxidant status in young active men” [NFS Journal 23 (2021) 37–43]

Ashish Joseph <sup>a</sup>, Svenia P. Jose <sup>b</sup>, Bintu T. Kalyan <sup>c</sup>, Renny R. Mammen <sup>d</sup>, I.M. Krishnakumar <sup>d</sup>, Bradley S. Fleenor <sup>e</sup>, Ratheesh Mohan <sup>b</sup>  

- <sup>a</sup> Department of Physical Education, St. Thomas College, Pala, Kottayam, Kerala, India
- <sup>b</sup> Department of Biochemistry, St. Thomas College, Kottayam, Kerala, India
- <sup>c</sup> Department of Physical Education, Christ College, Thrissur, Kerala, India
- <sup>d</sup> R&D Centre, Akay Natural Ingredients Pvt. Ltd., Cochin, Kerala, India
- <sup>e</sup> Human Performance Laboratory, Ball State University, Muncie, IN 47306, United States of America

Available online 13 May 2021.



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In-charge of Principal  
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Irinjalakuda

# SMMHSS PAZHAMBALACODE

PALAKKAD 678544

REF:.....

PHONE: 04922 232205

This is to Certify that Sri SUBASH .V of your institution has joined at SMMHSS Pazhambalacode to Pursue internship from 13.6.2016 and continued up to 16.8.2016 .During his tenure with us we found him extremely good ,hard working and committed to his duties as a trainee .During his stay with us he didn't avail any leave. He has rendered his service to the best of his ability.

We wish him all the best for his future

Pazhambalacode

16/08/2016

*[Handwritten Signature]*  
Head Mistress  
SMMHSS  
Pazhambalacode

*[Handwritten Signature]*



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Assistant Professor-  
In-charge of Principal  
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Injalakuda

பழங்குடியினர் மற்றும் கிராமிய அபிவிருத்தி மைய அறக்கட்டளை  
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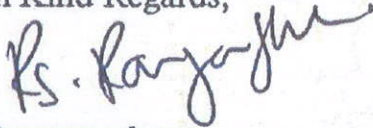
Date: 24.12.2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that ANANDAPADMANABHAN K.S, BSW (SF) from, Christ College, Irinjalakuda, Thrissur, he completed his 20 Days Fieldwork at CTRD Trust from 2<sup>nd</sup> to 24<sup>th</sup> December' 2019.

During his tenure we found his to be sincere & hard working. We wish him all the best for his future endeavors.

With Kind Regards,



RS.Ranganathan  
Managing Trustee



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
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# Activated carbon derived from ground nutshell as a metal-free oxygen reduction catalyst for air cathode in single chamber microbial fuel cell

Karthick S<sup>1</sup> · Vishnuprasad S<sup>1</sup> · Haribabu K<sup>1</sup> · Manju N J<sup>2</sup>

Received: 17 October 2020 / Revised: 7 January 2021 / Accepted: 26 January 2021

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## Abstract

A single-chamber microbial fuel cell (SCMFC) was constructed using activated carbon derived from ground nutshells (GAC) as a metal-free cathode catalyst. The prepared cathode catalyst was characterized by X-ray photoelectron spectroscopy (XPS), Brunauer-Emmett-Teller (BET), and Field emission scanning electron microscopy (FE-SEM), which demonstrates the chemical composition and the surface morphology of the synthesized material. The electrochemical characteristics of the cathode were investigated by electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV) analysis, which confirmed the high charge transfer capacity and catalytic activity property of GAC catalyst material. The MFC with GAC catalyst produces a maximum output voltage of 0.619 V and which is 1.61 times greater than that of bare carbon cloth (CC). For Pt/C and GAC-modified CC, high power density values of 0.763 W m<sup>-2</sup> and 0.521 W m<sup>-2</sup> were obtained at current densities 1.65 A m<sup>-2</sup> and 1.0 A m<sup>-2</sup>, respectively at 100 Ω. These results demonstrate that the GAC/CC is a promising cost-effective cathode catalyst for SCMFC.

**Keywords** Microbial fuel cell · Ground nutshells · High charge transfer · Catalytic activity

## 1 Introduction

Over the past several years, there has been a drastic increase in energy demand due to the tremendous growth in the global population and energy requirements [1]. This increase in demand has led to the injudicious exploitation of non-renewable sources of energy. The improper use of these resources had severe implications for the environment. Not only has there been an increase in the pace of depletion of these resources, but there has also been an increase in the emission of greenhouse gasses and subsequent issues such as global warming and climate change. The greenhouse gas emissions (GHG) sources are mainly divided into five sectors according to the Environmental Protection Agency (EPA) such as electricity

and heat (28%), industry (22%), agriculture (9%), residential (12%), and transportation (29%) [2, 3]. Therefore, it is essential to find environmentally friendly and renewable energy alternatives to alleviate the levels of pollution and restore nature's resources sustainably [4]. To effectively substitute the use of non-renewable sources of energy, the alternatives suggested must also be economically viable and accessible for use. One such energy technology environmentally friendly and sustainable energy is the microbial fuel cell (MFC) [5]. An MFC is a bioelectrochemical device capable of simultaneous energy generation and wastewater treatment by converting organic material present in wastewater into electrical energy using microorganisms as biocatalysts [6]. During the conversion, both electrons and protons are generated in the anodic chamber of the MEC. The electrons travel through an external circuit, thereby producing an electric current. The protons travel across a proton exchange membrane to the cathodic chamber, wherein it combines with an oxygen receptor to form water through the four-electron pathway (O<sub>2</sub> to H<sub>2</sub>O) [7]. Therefore, MFCs are a promising alternative to environmentally hazardous non-renewable sources of energy. However, its successful commercialization is still limited by its low power output and high cost [8]. The reasons for these

✉ Haribabu K  
haribhabu@nitc.ac.in

<sup>1</sup> Department of Chemical Engineering, National Institute of Technology Calicut, Kozhikode 673601, India

<sup>2</sup> Department of Geology and Environmental Science, Christ College, Irinjalakuda, India



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In-charge of Principal  
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# Devamatha



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11.08.2016

To,

The Principal  
Christ College  
Irinjalakuda, Thrissur.

Sub: B.P.Ed Internship reg:-

Respected Father,

*Greetings from Devamatha CMI Public School!*

I hereby inform you that Mr. Rahul C A was successfully completed his internship from our institution on 15<sup>th</sup> August 2016. We relieve the above student w.e.f. 16<sup>th</sup> August 2016. He assisted the Physical Education Department for coaching the Cricket and Volleyball team. He also took initiative to train the students for Independence day Marchpast.



Yours sincerely

  
Fr. Shaju Edamana CMI  
PRINCIPAL  
Devamatha CMI Public School  
Thrissur - 680 022, Kerala

Encl : Attendance Sheet



Fr. Dr. Jolly Andrews

Assistant Professor-  
In-charge of Principal

Christ College (Autonomous)  
Irinjalakuda, Thrissur

"The day that you have not done any good to the other will not be counted in the book of your life"

Fr. Dr. Jolly Andrews



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23-12-2019

## CERTIFICATE

This is to certify that **Ms. Akhila Jaison** sixth semester Bachelor of Social Work, Christ College (Autonomous) Irinjalakuda, Thrissur has undergone Placement field work training for 20 days at Free birds Open Shelter Home- Kozhikode, a project under the Association for Welfare of the Handicapped (AWH) assisted by the Ministry of Women and Child Government of India. During the period from 2<sup>nd</sup> December 2019 to 23<sup>rd</sup> December 2019

During here field work she was found active and involved in various activities of the organization.

We wish her all the best in future

*Aneesha V.*



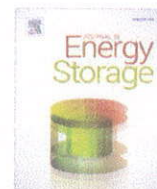
*[Signature]*  
CO-ORDINATOR  
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For Boys  
Kozhikode-673001

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## $\gamma$ -MnOOH-graphene nanocomposite as promising anode material for Li-ion capacitors

Shibu P. Varghese<sup>a,b,1</sup>, Binson Babu<sup>a,1</sup>, Vishnu Surendran<sup>a</sup>, Dijo Damien<sup>a,c</sup>, Rosy Antony<sup>d</sup>, Manikoth M. Shaijumon<sup>a,\*</sup>

<sup>a</sup> School of Physics, Indian Institute of Science Education and Research Thiruvananthapuram, Maruthamala PO, Vithura, Thiruvananthapuram, Kerala 695551, India

<sup>b</sup> Government Brennen College, Thalassery, Kerala 670106, India

<sup>c</sup> Christ College, Irinjalakuda, Kerala 680125, India

<sup>d</sup> Nirmalagiri College, Nirmalagiri, Kuthuparamba, Kerala 670701, India

### ARTICLE INFO

#### Keywords:

$\gamma$ -MnOOH-graphene nanocomposite  
 $\gamma$ -MnOOH nanorods  
 Li-ion battery  
 Kinetic studies  
 Li-ion capacitors

### ABSTRACT

Developing environmentally benign electrode materials with faster Li-ion kinetics is an essential requirement for high-performance Li-based energy storage devices. Here we report the large-scale synthesis of  $\gamma$ -MnOOH-graphene ( $\gamma$ -MnOOH-rGO) nanocomposite, through a simple hydrothermal route, for their application as potential anode material in Li-ion batteries. As-synthesized nanocomposite with the  $\gamma$ -MnOOH nanorods uniformly anchored on the graphene sheets exhibits enhanced electrochemical performance and achieves a very high specific capacity of  $\sim 435 \text{ mAh g}^{-1}$  at a current density of  $1.0 \text{ A g}^{-1}$ . Detailed electrochemical studies reveal faster Li-ion kinetics in  $\gamma$ -MnOOH-rGO nanocomposite electrode, dominated by non-diffusion controlled processes ( $\sim 80\%$  at  $1.0 \text{ mV s}^{-1}$ ). Further, the full-cell Li-ion capacitor fabricated with  $\gamma$ -MnOOH-rGO nanocomposite as the anode and activated carbon as the cathode exhibits a maximum energy density of  $\sim 51 \text{ Wh kg}^{-1}$  and a maximum power density of  $\sim 6.3 \text{ kW kg}^{-1}$ , with excellent capacity retention of more than  $\sim 87\%$  upon 8500 cycles. The present work thus demonstrates  $\gamma$ -MnOOH-graphene nanocomposite as promising anode material for advanced Li-ion batteries and high power Li-ion capacitors.

### 1. Introduction

Electrochemical energy storage systems such as batteries and supercapacitors are considered as most promising technologies that provide sustainable solutions to address the rising energy demands and environmental concerns [1]. Lithium-ion batteries (LIBs), prevalent in the electronic markets for the last three decades, continue to be the dominant power source for a wide range of applications, from portable electronic devices to large-scale hybrid electric vehicles and grid storage [2]. However, many research activities are focused on exploring alternative materials to replace the conventional graphite anode that is fundamentally limited by low specific capacity ( $\sim 372 \text{ mAh g}^{-1}$ ), poor rate capability, and safety concerns [3,4]. In search of various anode materials for LIBs, manganese-based transition metal oxides attain much importance due to their low cost, high abundance, enhanced activity, multiple oxidation states, various possible crystal structures, and the environmentally benign nature [5–8]. Among the different

manganese-based transition metal oxides, the tunnel structured  $\gamma$ -MnOOH shows promising potential as anode material for lithium-ion batteries owing to its high theoretical capacity of  $914 \text{ mAh g}^{-1}$  (three times greater than graphite) and better electronic conductivity  $\sim 10^{-4} - 10^{-5} \text{ S cm}^{-1}$  in comparison with  $\text{MnO}_x$  ( $\sim 10^{-8}$  to  $10^{-6} \text{ S cm}^{-1}$ ) [9,10]. However, like other manganese oxides,  $\gamma$ -MnOOH experience capacity fading upon cycling arising from severe volume changes resulting in low initial Coulombic efficiency and poor cycling stability [11–14]. Engineering of materials in the nano regime helps overcome these issues through the improved active surface area and reduced ion diffusion length, thus resulting in enhanced electrochemical performances. Hybridizing the materials with carbon matrices (such as graphene, carbon nanotubes, carbon nanofiber) further improves the electronic and ionic conductivities, thus suppressing the volume changes, resulting in long-term stability as well as high rate capability of the hybrid electrode [15–18].

Herein we employ  $\gamma$ -MnOOH-rGO nanocomposite, synthesized by a

\* Corresponding author.

E-mail address: [shaiju@iisertvm.ac.in](mailto:shaiju@iisertvm.ac.in) (M.M. Shaijumon).

<sup>1</sup> These authors contributed equally to this work.

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Ernakulam (DT.), P. O. Maliankara, Via: Moothakunnam - 683 516

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(Accredited by NAAC with - B Grade)

Phone : 0484-2482386, 2483600, FAX : 0484-2483600

Website : www.snmasm.org, E-mail snmcm@yahoo.com & principalsnmc@gmail.com

Ref. No. A<sub>3</sub>-1/2016

Date.....16.8.2016.....

## COMPLETION CERTIFICATE

Certified that Mr. Sucheendrapal K.S. have completed his Internship programme from 13-06-2016 to 16-08-2016 . His Conduct and activities during the period was good.

B/-



Principal  
Drawing and Disbursing Office  
S. N. M. College, Maliankara

*[Handwritten signature]*



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# Electrochemical lithium and sodium insertion studies in 3D metal oxy-phosphate framework $\text{MoWO}_3(\text{PO}_4)_2$ for battery applications

M. Satyanarayana<sup>1,2</sup> · Ediga Umeshbabu<sup>3</sup> · A. K. Jibin<sup>4</sup> · Joseph James<sup>1</sup> · P. Justin<sup>5</sup> · U. V. Varadaraju<sup>1</sup>

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## Abstract

A new type of three-dimensional (3D) oxy-phosphate materials are explored for the application of Li and Na batteries. The molybdenum tungsten oxy phosphate,  $\text{MoWO}_3(\text{PO}_4)_2$ , was synthesized by solid-state method and evaluated for Li/Na insertion/de-insertion electrode material for the first time. The cell at charged state (vs.  $\text{Li}^+/\text{Li}$ ) showed a discharge capacity of  $786 \text{ mAh g}^{-1}$  within the voltage window of 0.3 V with amorphization of crystalline  $\text{MoWO}_3(\text{PO}_4)_2$  as observed from ex-situ powder XRD analysis. The structural integrity was revealed in this material, even with nearly more than 5  $\text{Li}^+$  ions into the lattice, leading to the discharge capacity of  $250 \text{ mAh g}^{-1}$ . The reversible charge/discharge behavior with insertion/de-insertion of 2.4  $\text{Li}^+$  ions in the voltage range of 1.65–3.5 V resulted in 110 and  $95 \text{ mAh g}^{-1}$  at C/10 and C/5 rates, respectively. On the other hand, poor cycling performance was noticed for Na ion insertion and desertion, with a discharge capacity of  $250 \text{ mAh/g}$  within the voltage range of 0.3–3.5 V (vs.  $\text{Na}^+/\text{Na}$ ).

**Keywords**  $\text{MoWO}_3(\text{PO}_4)_2$  · X-ray diffraction · Li and Na insertion · Electrochemical properties

## Introduction

Lithium insertion and de-insertion in tungsten and molybdenum-based oxides have been extensively studied for Li and Na-ion batteries. The reported phases of molybdenum/tungsten oxides and alkali molybdenum/tungsten oxides include  $\text{MoO}_3$ ,  $\text{WO}_3$ ,  $\text{A}_x\text{MoO}_3$  ( $\text{A} = \text{Li}, \text{Na}$ ),  $\text{Li}_2\text{MoO}_3$ , and  $\text{Li}_5\text{Mo}_5\text{O}_{12}$  [1–4]. These oxides showed Li-ion insertion and de-insertion of 2 to 3 Li ions into and from the structure, respectively, in the voltage range of 0.5–4.3 V [4–6]. Recently, the triclinic  $\text{Li}_4\text{Mo}_5\text{O}_{17}$  phase (space group,  $P-1$ )

reported by Pop et al. has edge shared  $\text{MoO}_6$  polyhedra, resulting in a ribbon type structure. The insertion of 7 Li-ions into the triclinic  $\text{Li}_4\text{Mo}_5\text{O}_{17}$  phase result in a rock salt type  $\text{Li}_{11}\text{Mo}_5\text{O}_{12}$  phase. De-insertion of 7 Li-ions shows the formation of the parent phase, cycled at a C/100 rate in the voltage window of 2.2–3.0 V [7]. The garnet framework compound,  $\text{Li}_3\text{Nd}_2\text{W}_2\text{O}_{12}$ , has been explored for Li-ion batteries and shows the possibility of reversible insertion and de-insertion of Li ions.

New polyanionic materials, especially phosphate-based compounds, are considered structurally and thermally resistant during charge/discharge cycling with fast diffusion of Li and Na ions [8, 9]. For instance,  $\text{LiFePO}_4$  with olivine structures is the best example of the cathode material of choice for Li-ion battery applications in plug-in hybrid electric vehicles. This is because of its structural integrity and thermal and interface stability during fast diffusion of Li ions at high rate capability [9–11]. NASICON-type materials like  $\text{A}_3\text{Fe}_2(\text{PO}_4)_3$  ( $\text{A} = \text{Li}$  or  $\text{Na}$ ),  $\text{V}_2(\text{SO}_4)_3$  [12, 13], and the oxy polyanionic framework compounds such as  $\text{Li}_x\text{MOXO}_4$  ( $\text{M} = \text{V}$  and  $\text{Ti}$ ;  $\text{X} = \text{S}, \text{P}$  and  $\text{S}_2$ ) and both  $\alpha$  and  $\beta$  forms of  $\text{NbO}(\text{PO}_4)$  have been widely explored as cathode materials recently for Li and Na-ion batteries [14–17]. Due to the availability of easily accessible sites for the intercalated ions to occupy and the presence of metal atoms that

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<sup>3</sup> Helmholtz Institute Ulm (HIU) Electrochemical Energy Storage, Helmholtzstraße 11, 89081 Ulm, Germany

<sup>4</sup> Department of Chemistry, Christ College, University of Calicut, Irinjalakuda Kerala-680125, India

<sup>5</sup> Department of Chemistry, Rajiv Gandhi University of Knowledge Technologies, RK Valley, 516330 Andhra Pradesh, India

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Irinjalakuda

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SOS CHILDREN'S  
VILLAGES  
INDIA

A loving home for every child

## TO WHOMSOEVER IT MAY CONCERN

**Abhirami KP** studying 3rd year BSW in Christ College, Irinjalakuda has successfully completed her internship from 3<sup>rd</sup> December 2019 to 23<sup>rd</sup> December 2019 in SOS Children's Village, Puducherry. The intern undertook various significant tasks carried out in our project and was involved in important documentation within the organisation. We wish her best for all her future endeavours.

Purusharth Singh

Village Director



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

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# GOVT.HIGH SCHOOL VATTENAD

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## RELIEVING ORDER

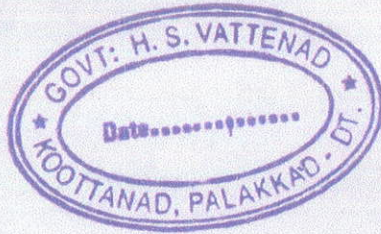
Sub: Gen.Edn: B Ed Training-Physical Education Teacher-Relieving orders issued-reg

Ref:

Sri.SHANU.P.V, who has been under B Ed training as Physical Education Teacher in this school from 13/06/2016 to 15/08/2016 is relieved off his training w.e.f the AN of 15/08/2016 to report at Christ College,Irinjalakkuda.

Vattenad

15.08.2016



Head Mistress

*G. Suseela*

Headmistress

G.H.S. VATTENAD

KOOTTANAD P.O.

PIN: 679 533

*[Handwritten signature]*



Fr. Dr. Jolly Andrews

Assistant Professor-  
In-charge of Principal  
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**DIRECTOR:** Joseph Ponraj

**TREASURER / PRINCIPAL:** Indira Yesudian B.A., M.Ed., D.S.E.

**SECRETARY:** S. Geetha Bai B.Com

**Date:** 21<sup>st</sup> December 2019

To,  
The Head of the Department  
Department of Social Work  
Christ College (Autonomous) Irinjalakuda  
Irinjalakuda North, Thrissur Dist., Kerala - 680 125.

### Exposure - Interns - Department of Social Work - Christ College (Autonomous) Certificate - Active Involvement - Abel Myson - Final Year BSW


This does serve to inform you kindly that your bonafide students (final year BSW) - **Abel Myson**, has undergone his field work training at our Institution from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 for 20 days as required of them.

During the course of their practical exposure, they have involved to fulfill their objectives to an extent.

01. Opportunities provided to practice their spoken English.
02. Chances given to develop their communication skill to express their mind in words/actions to be an effective social work.
03. Dealt directly with the mentally challenged children in our organization.
04. Learnt to adjust with the existing situation while reaching out to needy people around on social service.
05. Engaged keenly to improve upon their personality.

As a part of the program, they took time to understand the mindset/background of the special children, occupied them to refresh their minds & target them simple domestic skills.

They cooperated well with our management & their rapport with our staff was congenial. We wish him well for bright career.

  
Joseph Ponraj  
Director



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



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# SMMHSS PAZHAMBALACODE

PALAKKAD 678544

REF:-.....


PHONE: 04922 232205

This is to Certify that Sri SUBASH .V of your institution has joined at SMMHSS Pazhambalacode to Pursue internship from 13.6.2016 and continued up to 16.8.2016 .During his tenure with us we found him extremely good ,hard working and committed to his duties as a trainee .During his stay with us he didn't avail any leave. He has rendered his service to the best of his ability.

We wish him all the best for his future

Pazhambalacode

16/08/2016

  
Head Mistress  
S M M H S S  
Pazhambalacode





Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda


21<sup>st</sup> December 2019

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. Sujin Gigi** from **Christ College Irinjalakuda (Autonomous), Thrissur** has successfully completed his 20 days field work at Shreyas, Sulthan Bathery, Wayanad from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019. During the internship, he got opportunity to familiarize himself with different departments and community development initiatives of Shreyas and practice social work methods. He did following activities during his placement very sincerely and efficiently.

- Learned Administrative Structure and Organizational Profile
- Conducted training programme and sports meet for tribal community
- Conducted group work
- Coordinated Recovery activities for the victims of Kerala Floods 2018
- Prepared Case Study and practised Case Work
- Documentation of the programmes
- Conducted social experiment and collective action
- Organized street play
- Participated in the 4 tier evaluation process of Shreyas

We wish all success in his future endeavors.

  
Adv. Fr. Benny Edayath  
Executive Director



  
Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda





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M. Satyanarayana<sup>1,2</sup> · Ediga Umeshbabu<sup>3</sup> · A. K. Jibin<sup>4</sup> · Joseph James<sup>1</sup> · P. Justin<sup>5</sup> · U. V. Varadaraju<sup>1</sup>

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**Fr. Dr. Jolly Andrews**  
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Christ College (Autonomous)  
Irinjalakuda

**PARIPPU HIGH SCHOOL**  
PARIPPU P.O  
KOTTAYAM 686014, KERALA Phone 0481-2516197

DATE: 16/08/2016

RELIEVING ORDER

On completion of his training as Physical Education Teacher in this school for the period from 13/06/2016 to 16/08/2016 Sri Sri.Shahul V Shaji is relieved of his training here on the F N of 16/08/2016 with directions to report at his parent college, CHRIST COLLEGE, Irinjalakuda. His work and conduct during the period were Excellent.



*Aeethan*  
Headmistress  
High School Parippu

*Fr. Dr. Jolly Andrews*



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
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Karnataka State, South India



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Web Site: [www.gerizimhome.com](http://www.gerizimhome.com)

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FOUNDER: G.J. Yesudian M.A., B.Ed., D.S.S.D.H.

TREASURER / PRINCIPAL: Indira Yesudian B.A., M.Ed., D.S.E.

DIRECTOR: Joseph Ponraj

SECRETARY: S. Geetha Bai B.Com

Date: 21<sup>st</sup> December 2019

To,

The Head of the Department  
Department of Social Work  
Christ College (Autonomous) Irinjalakuda  
Irinjalakuda North, Thrissur Dist., Kerala – 680 125.

### Exposure - Interns - Department of Social Work - Christ College (Autonomous) Certificate - Active Involvement - Sani Simon - Final Year BSW

This does serve to inform you kindly that your bonafide students (final year BSW) – **Sani Simon**, has undergone his field work training at our Institution from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 for 20 days as required of them.

During the course of their practical exposure, they have involved to fulfill their objectives to an extent.

01. Opportunities provided to practice their spoken English.
02. Chances given to develop their communication skill to express their mind in words/actions to be an effective social work.
03. Dealt directly with the mentally challenged children in our organization.
04. Learnt to adjust with the existing situation while reaching out to needy people around on social service.
05. Engaged keenly to improve upon their personality.

As a part of the program, they took time to understand the mindset/background of the special children, occupied them to refresh their minds & target them simple domestic skills.

They cooperated well with our management & their rapport with our staff was congenial. We wish him well for bright career.

  
Joseph Ponraj  
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## Abstract

A new type of three-dimensional (3D) oxy-phosphate materials are explored for the application of Li and Na batteries. The molybdenum tungsten oxy phosphate,  $\text{MoWO}_3(\text{PO}_4)_2$ , was synthesized by solid-state method and evaluated for Li/Na insertion/de-insertion electrode material for the first time. The cell at charged state (vs.  $\text{Li}^+/\text{Li}$ ) showed a discharge capacity of  $786 \text{ mAh g}^{-1}$  within the voltage window of 0.3 V with amorphization of crystalline  $\text{MoWO}_3(\text{PO}_4)_2$  as observed from ex-situ powder XRD analysis. The structural integrity was revealed in this material, even with nearly more than 5  $\text{Li}^+$  ions into the lattice, leading to the discharge capacity of  $250 \text{ mAh g}^{-1}$ . The reversible charge/discharge behavior with insertion/de-insertion of 2.4  $\text{Li}^+$  ions in the voltage range of 1.65–3.5 V resulted in 110 and 95  $\text{mAh g}^{-1}$  at C/10 and C/5 rates, respectively. On the other hand, poor cycling performance was noticed for Na ion insertion and desorption, with a discharge capacity of 250  $\text{mAh/g}$  within the voltage range of 0.3–3.5 V (vs.  $\text{Na}^+/\text{Na}$ ).

**Keywords**  $\text{MoWO}_3(\text{PO}_4)_2$  · X-ray diffraction · Li and Na insertion · Electrochemical properties

## Introduction

Lithium insertion and de-insertion in tungsten and molybdenum-based oxides have been extensively studied for Li and Na-ion batteries. The reported phases of molybdenum/tungsten oxides and alkali molybdenum/tungsten oxides include  $\text{MoO}_3$ ,  $\text{WO}_3$ ,  $\text{A}_x\text{MoO}_3$  ( $\text{A} = \text{Li}, \text{Na}$ ),  $\text{Li}_2\text{MoO}_3$ , and  $\text{Li}_5\text{Mo}_5\text{O}_{12}$  [1–4]. These oxides showed Li-ion insertion and de-insertion of 2 to 3 Li ions into and from the structure, respectively, in the voltage range of 0.5–4.3 V [4–6]. Recently, the triclinic  $\text{Li}_4\text{Mo}_5\text{O}_{17}$  phase (space group,  $P-1$ )

reported by Pop et al. has edge shared  $\text{MoO}_6$  polyhedra, resulting in a ribbon type structure. The insertion of 7 Li-ions into the triclinic  $\text{Li}_4\text{Mo}_5\text{O}_{17}$  phase result in a rock salt type  $\text{Li}_{11}\text{Mo}_5\text{O}_{12}$  phase. De-insertion of 7 Li-ions shows the formation of the parent phase, cycled at a C/100 rate in the voltage window of 2.2–3.0 V [7]. The garnet framework compound,  $\text{Li}_3\text{Nd}_2\text{W}_2\text{O}_{12}$ , has been explored for Li-ion batteries and shows the possibility of reversible insertion and de-insertion of Li ions.

New polyanionic materials, especially phosphate-based compounds, are considered structurally and thermally resistant during charge/discharge cycling with fast diffusion of Li and Na ions [8, 9]. For instance,  $\text{LiFePO}_4$  with olivine structures is the best example of the cathode material of choice for Li-ion battery applications in plug-in hybrid electric vehicles. This is because of its structural integrity and thermal and interface stability during fast diffusion of Li ions at high rate capability [9–11]. NASICON-type materials like  $\text{A}_3\text{Fe}_2(\text{PO}_4)_3$  ( $\text{A} = \text{Li}$  or  $\text{Na}$ ),  $\text{V}_2(\text{SO}_4)_3$  [12, 13], and the oxy polyanionic framework compounds such as  $\text{Li}_x\text{MOXO}_4$  ( $\text{M} = \text{V}$  and  $\text{Ti}$ ;  $\text{X} = \text{S}, \text{P}$  and  $\text{Si}$ ) and both  $\alpha$  and  $\beta$  forms of  $\text{NbO}(\text{PO}_4)$  have been widely explored as cathode materials recently for Li and Na-ion batteries [14–17]. Due to the availability of easily accessible sites for the intercalated ions to occupy and the presence of metal atoms that

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<sup>3</sup> Helmholtz Institute Ulm (HIU) Electrochemical Energy Storage, Helmholtzstraße 11, 89081 Ulm, Germany

<sup>4</sup> Department of Chemistry, Christ College, University of Calicut, Irinjalakuda Kerala-680125, India

<sup>5</sup> Department of Chemistry, Rajiv Gandhi University of Knowledge Technologies, RK Valley, 516330 Andhra Pradesh, India

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Springer  
Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# SREE NARAYANA CENTRAL SCHOOL

(A Senior Secondary School, Affiliated to CBSE, Delhi. Code No. 930185)

NEDUNGOLAM P.O., KOLLAM. PIN. 691 334. Tel.: Office - 0474 2514543. Principal: 0474 2061824

Managed by Sree Narayana Educational Society, Paravur, Kollam.

Ref. No 32/SNCS/2016-'17

12.08.2016

**The Principal,  
Christ College,  
Irinjalakkuda,  
Kerala.**

Sir,

Sub:- Relieving Order

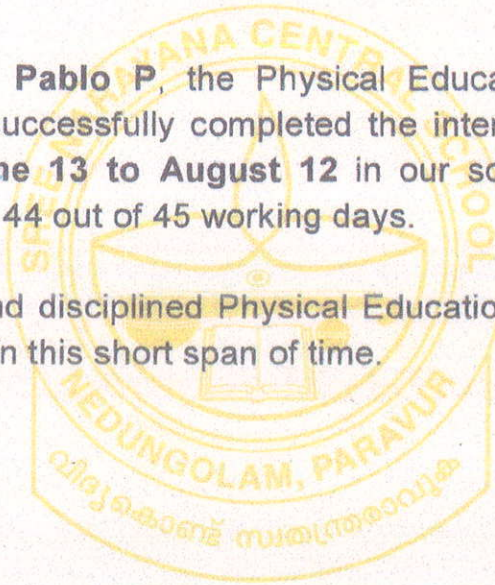
I hereby relieve **Mr. Pablo P**, the Physical Education student of your institution, who has successfully completed the internship programme for two months from **June 13 to August 12** in our school. His attendance during the period was 44 out of 45 working days.

He is very efficient and disciplined Physical Education Trainer and he has proved his ability within this short span of time.

Thanking you,

Yours faithfully,

**Dr. V. Radhakrishnan Nair**  
Principal  
Sree Narayana Central School  
Nedungolam



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakkuda



## Certificate of Internship

Dear Ms. Sandhya A.S  
from Christ College Irinjalakuda, Thrissur, Kerala  
Youth for Seva congratulates you for your endearing and  
committed service as an Intern.

Assigned Projects CSR Volunteering

Date 03/12/2019 to 23/12/2019

DATE : 23/12/2019

  
COORDINATOR





**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

## First record of gynandromorphism in *Trithemis aurora* (Odonata: Libellulidae)

Ayikkara Vivek Chandran<sup>1,4</sup>, Ajay Krishna Karakuth<sup>2</sup>, Subin  
Kaniyamattathil Jose<sup>1</sup> & Hansruedi Wildermuth<sup>3</sup>

<sup>1</sup>Department of Geology and Environmental Science, Christ College, Thrissur,  
Kerala, India

<sup>2</sup>Karakuth house, Changaleeri, Mannarkkad, Palakkad, Kerala, India

<sup>3</sup>Haltbergstrasse 43, 8630 Rüti, Switzerland; <hansruedi@wildermuth.ch>

<sup>4</sup>Corresponding author: <avivekchandran2@gmail.com>

Received 23<sup>rd</sup> November 2020; revised and accepted 23<sup>rd</sup> January 2021

**Abstract.** A gynandromorphic individual of *Trithemis aurora* is reported from a garden in Palakkad district, Kerala state, India. Its eyes, thorax, legs, wings, and abdomen show mosaic gynandromorphy. The abdomen is mostly gynochromic with the tip bearing female appendages. Detailed study of the specimen shows that female characters predominate but significant areas exhibit male characters.

**Further key words.** Dragonfly, Anisoptera, mosaic gynander, androchromism

### Introduction

Gynandromorphs are genetically chimeric individuals consisting of adjacent male and female tissues, thus differing from intersexes which are genetically uniform (NARITA et al. 2010). Gynandromorphism is a rare phenomenon in nature and is readily detected in species that show sexual dimorphism. In arthropods, gynandromorphs have been recorded in crustaceans (FARMER 2004), arachnids (e.g., PALMGREN 1979; COKENDOLPHER & SISSON 1988; LABRUNA et al. 2002) and insects (e.g., MORGAN & BRIDGES 1919; NIELSEN 2010; GJERSHAUG et al. 2016). In dragonflies, gynandromorphism has been reported in at least 55 cases (cf. review by MARTENS & WILDERMUTH 2021). This phenomenon is conspicuous in species that exhibit marked sexual colour dimorphism such as *Crocothemis servilia* (Drury, 1770) (YOKOTA & ASAHINA 1953; FUTAHASHI 2017; RENJITH & CHANDRAN 2020), *Brachythemis contaminata* (Fabricius, 1793) (JOSHI et al. 2020) or *Neurothemis tullia* (Drury, 1770) (SHOME et al. 2019). Here we report on a case of phenotypical mo-





Phone : Office : 0480-2825020  
Resi : 2825269

# Pratheeksha Training Centre

(For Mentally Retarded Children)  
CHRIST NAGAR, IRINJALAKUDA  
Thrissur Dt., Kerala - 680 125

Date: 16.8.2016.....

To,

The Principal  
Christ college  
Irinjalakuda.

Sub:- Completion Certificate and attendance report.

Sir,

Mr. Salil B.S Internship trainee under internship programe for four year integrated BPEd student has completed internship programe on 16<sup>th</sup> August 2016

He was present on all working days of this institution from 13<sup>th</sup> June to August 2016 .

With Regards

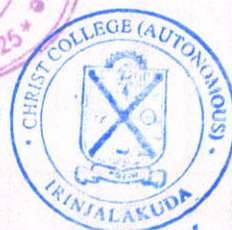
*Dr. Paulay*

Yours faithfully

PRINCIPAL  
Pratheeksha Training Centre  
Christ Nagar, Irinjalakuda - 680 125

Place : Irinjalakuda

Date : 16-8-2016



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



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## TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms. ANUPAMA. P S, D/o. Sajeevan P A, final year student of B.S.W (Roll No: CCARBSW002), Christ College Autonomous, Irinjalakuda, India, has under gone for field work from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019 at this institution. During the period of her field work, she was found punctual, hardworking and inquisitive.

We wish all success in her future endeavor.

Poomala

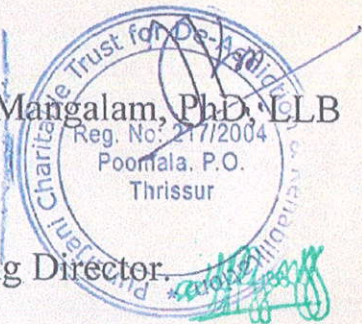
21/12/2019

Dr. Johns K. Mangalam, Ph.D., LLB

Reg. No. 217/2004

Poomala. P.O.  
Thrissur

Managing Director



Fr. Dr. Jolly Andrews

Assistant Professor-

In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# Human–wildlife interactions and people’s attitudes towards conservation: a case study from Central Kerala, India

S. K. Govind, E. A. Jayson

Govind, S. K., Jayson, E. A., 2021. Human–wildlife interactions and people's attitudes towards conservation: a case study from Central Kerala, India. *Animal Biodiversity and Conservation*, 44.2: 139–151, Doi: <https://doi.org/10.32800/abc.2021.44.0139>

## Abstract

*Human–wildlife interactions and people’s attitudes towards conservation: a case study from Central Kerala, India.* This paper studies the human–wildlife interaction in Central Kerala, India, and attempts to understand local people’s attitude toward wildlife and conservation. Data were collected from April 2009 to March 2014. A structured questionnaire survey was carried out among people living in the fringe areas of the forest (n = 210). Self–reported household crop loss was modelled as a function of agricultural, demographic and environmental factors. Wild pig (*Sus scrofa*) (57.1%) was the main crop foraging species, followed by Asian elephant (*Elephas maximus*) (12.9%). It was reported that 36% of farmers’ annual income was lost due to crop foraging by wild animals. Leopard (*Panthera pardus*) (69.76%), Indian rock python (*Python molurus*) (13.95%), dhole (*Cuon alpinus*) (9.3%) and stray dogs (6.97%) were responsible for the attacks on livestock. The factors that influenced crop loss according to the farmers were the extent of agriculture land that they owned (coefficient = 0.968), the distance to reserve forest from crop fields (–0.009), and age of respondents (0.78). Due to people’s awareness concerning the importance of wildlife, reports on human–wildlife interaction in the newspapers and strict enforcement of wildlife laws, people’s attitude towards conservation of wildlife was good, and they were not taking any negative precautions against wild animals.

Key words: Human–wildlife interaction, Wildlife conservation, Wildlife management

## Resumen

*La interacción entre los humanos y la fauna silvestre y la actitud de las personas en relación con la conservación de la fauna silvestre: un estudio de casos en Kerala central, en la India.* El presente artículo estudia la interacción entre los humanos y la fauna silvestre en Kerala central, en la India, y trata de entender la actitud de las personas en relación con la conservación de la fauna silvestre. Los datos se recopilaron entre abril de 2009 y marzo de 2014. Se llevó a cabo una encuesta estructurada entre la población que habita en los márgenes de las zonas forestales (n = 210). Se elaboró un modelo de la pérdida de cultivos comunicada por los hogares como una función de factores agrícolas, demográficos y ambientales. El cerdo (*Sus scrofa*) era la principal especie que se alimentaba de los cultivos (57,1%), seguida del elefante asiático (*Elephas maximus*) (12,9%). Se comunicó que el 36% de los ingresos anuales de los agricultores se perdió a causa de los animales silvestres. El leopardo (*Panthera pardus*) (69,76%), el pitón de la India (*Python molurus*) (13,95%), el perro salvaje asiático (*Cuon alpinus*) (9,3%) y los perros callejeros (6,97%) atacaron al ganado. La superficie de tierra agrícola propiedad de agricultores que habitan en los márgenes (el coeficiente es de 0,968), la distancia de la parcela de cultivo a la reserva forestal (–0,009) y la edad de los encuestados (0,78) fueron los factores significativos que influyeron en la pérdida de cultivos comunicada por los agricultores que habitan en los márgenes del bosque. Debido a la concienciación de la población acerca de la importancia de la fauna silvestre, los artículos de prensa sobre la interacción entre los humanos y la fauna silvestre y el cumplimiento estricto de la legislación en materia de vida silvestre, la actitud respecto de la conservación de la fauna silvestre era buena y no se estaban tomando precauciones negativas contra los animales silvestres.

Palabras clave: Interacción entre humanos y fauna silvestre, Conservación de la fauna silvestre, Gestión de la fauna silvestre

Received: 27 I 20; Conditional acceptance: 16 IV 20; Final acceptance: 24 III 21

Suresh K. Govind, Department of Psychology, Christ College, Injalakuda, Thrissur, Kerala, 680 125 India.  
E. A. Jayson, Department of Wildlife Biology, Kerala Forest Research Institute, Peechi, Kerala, 680 653 India

Corresponding author: Suresh K. Govind. E-mail: [sureshavinissery@gmail.com](mailto:sureshavinissery@gmail.com)

ISSN: 1578–665 X  
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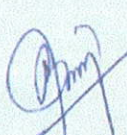
21<sup>st</sup> December 2019

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. Ashish Manohar** from **Christ College Irinjalakuda (Autonomous), Thrissur** has successfully completed his 20 days field work at Shreyas, Sulthan Bathery, Wayanad from 2<sup>nd</sup> December 2019 to 21<sup>st</sup> December 2019. During the internship, he got opportunity to familiarize himself with different departments and community development initiatives of Shreyas and practice social work methods. He did following activities during his placement very sincerely and efficiently.

- Learned Administrative Structure and Organizational Profile
- Conducted training programme and sports meet for tribal community
- Conducted group work
- Coordinated Recovery activities for the victims of Kerala Floods 2018
- Prepared Case Study and practised Case Work
- Documentation of the programmes
- Conducted social experiment and collective action
- Organized street play
- Participated in the 4 tier evaluation process of Shreyas

We wish all success in his future endeavors.

  
Adv. Fr. Benny Edayath  
Executive Director





Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda




**ST. THOMAS HIGHER SECONDARY SCHOOL**  
THIROOR, P.O. MULAGUNNATHUKAVU  
THRISSUR - 680 581

Ref.

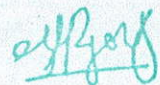
Date .....

RELIEVING CERTIFICATE

Smt, AKHILA A M (B.P.Ed  
(Intergrated) Internship student) has joined at St. Thomas H  
S S Thiroor 13/6/2016 for B.P.Ed (Intergrated) Internship,  
and relieved of her duties in the F N of 16/08/2016.

  
**VARGHESE T. A.**  
Head Master  
St. Thomas H.S.S.  
Thiroor







**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



## Seawater Intrusion in Coastal Areas from Poovar to Shangumugham, Thiruvananthapuram District, Kerala, India

R. Tharun<sup>1</sup>, M.Suresh Gandhi<sup>2\*</sup> and P. Jeshma<sup>2</sup>

<sup>1</sup>Department of Geology and Environmental Science, Christ College, Irinjalakuda-680125 (KL), India

<sup>2</sup>Department of Geology, University of Madras, Guindy campus, Chennai -600025(TN), India

(\*Corresponding author, Email: msureshgandhi@gmail.com)

### Abstract

The coastal aquifers in Kerala are experiencing seawater intrusion due to overexploitation in order to meet the demand of the growing population. Only a few studies have been done in the present study area. So, a study was conducted on coastal aquifers from Poovar to Shangumugham, Thiruvananthapuram district, Kerala state in order to find out the status of seawater intrusion in the area. Groundwater samples were collected and the quality and impact of saltwater intrusion were studied by determining the geochemical characters of 78 groundwater samples collected during pre-monsoon and post-monsoon each. Physical parameters and chemical parameter major cations and anions were determined. The data were analyzed and the multivariate analysis was carried out using SPSS 24. The correlation and R-mode factor analysis confirms the presence of seawater intrusion and using Q-mode factor analysis the areas affected by seawater intrusion were demarcated. Thus, the groundwater of the study area has to be managed sustainably considering the geochemical nature and their seasonal variations, as region proposed for study is a coastal fragile environment.

**Keywords :** Salt Water Intrusion, Coastal Aquifers, Poovar-Shangumugham, Groundwater, Kerala

### Introduction

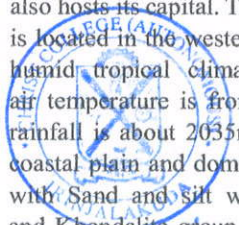
According to Centre for Coastal Zone Management and Coastal Shelterbelt data an appreciable amount of population lives on the coastal zones of India, which fluctuates depending on the season as most coastal areas are tourism hotspots and they depend primarily on groundwater for their needs since in these area's water is available with considerable ease. The overexploitation of groundwater in the coastal aquifers in order to meet the requirement of the growing population led to the introduction of saltwater to the fresh groundwater which is not a good scenario. The increasing trend towards the coastal tourism and improper management of the resource add the misery. Many studies indicated that the coastal groundwater system of Kerala experiences setbacks in terms of quality and quantity (Dipanjali, 2000; CGWB, 2002; Kunhambu, 2003; Laluraj *et al.*, 2005; CGWBKR 2007; Manjusree *et al.*, 2009; Prasanth *et al.*, 2012; Boominathan *et al.*, 2012; Sarath *et al.*, 2012; Priju *et al.*, 2012; Priju *et al.*, 2014; Anil-Kumar *et al.*, 2015; Midhun *et al.*, 2017; Sreekesh *et al.*, 2018; Pramada *et al.*, 2018). So, it is so important to assess the vulnerability of the aquifer to seawater ingress and only a few studies have

been done in the present study area. So, the main purpose of the study is to understand the present hydrogeological situation along the coastal stretches extending from Poovar to Shangumugham in Trivandrum district of Kerala state and grade the area based on vulnerability of aquifers towards intrusion of seawater for which multivariate statistical analyses act as a reliable method (Akbal *et al.*, 2011).

### Study Area

The study area is located in the coastal regions of Thiruvananthapuram district, Kerala state. The study area extends from coastal aquifers of Poovar to Shangumugham. The district is one of the rapidly developing areas in Kerala and also hosts its capital. The study area extends to 100sq.km and is located in the western coast of India which experiences a humid tropical climate. The annual variation of mean air temperature is from 21°C to 34°C with average annual rainfall is about 2035mm. The area lies in the low land of coastal plain and dominated by Sandstone and Silt together with Sand and Silt with patches of Laterite, Charnockite and Khondalite group of rocks. The laterites are secondary

*effort*



**Dr. Jolly Andrews**  
Assistant Professor-  
in charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



ശില മനോഹരൻ  
പ്രസിഡണ്ട്

പി.ഒ. പിറ്റിയോടി- 680301  
ഫോൺ: 0487-2658712, 9496046126

നെന്മണിക്കര ഗ്രാമപഞ്ചായത്ത്

പാലിയങ്കര, തൃശ്ശൂർ ജില്ല

തീയതി: 15/10/2017

**EXPERIENCE CERTIFICATE**

This is certify that, M/s. Veni Vasudevan had successfully completed her concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish her all the success in future endeavour.

President  
Nenmanikkara Grama Panchayath



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

**SHREYAS**  
ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE

*Certificate*

This is to certify that Mr./Ms. *Venji Vasudevan* from  
*Christ College, Thiruvithalkota* has undergone *25* days  
of Social Work Training/ Placement at Shreyas, Sulfhan Bathy, Wayana

*28/2/2019*  
Date

*[Signature]*  
Official Seal



Executive Director

**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Thiruvithalkota



Dept. of Women & Child Development, Kerala



### PSYCHOSOCIAL FIRST AID FOR SURVIVORS OF KERALA FLOOD DISASTER

#### Certificate of Participation

This is to certify that Mr./Mrs./Ms. VENI VASUDEVAN attended the training program on Psychosocial first aid in Disasters conducted by National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru in collaboration with Department of Women and Child Development and Department of Health & Family welfare, Government of Kerala. He/ She provided psychosocial first aid for the survivors and their families in the flood affected area from 20.8.18 to 2.9.18 & 5.9.18 in

Thrissur District, Kerala in the capacity of (Project Coordinator/Team Leader/Volunteer).

District Child Protection Officer  
Thrissur  
Govt. of Kerala

District Nodal Officer  
Mental Health Programme  
Dept. of Health Services

Registrar  
NIMHANS



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

# St. Thomas Higher Secondary School Thottumukkam

P.O. Thottumukkam, Kozhikode (Dt), Pin - 673639

Ref:

Date: 16-8-16.

To  
The Principal  
Christ College  
Irinjalakuda.

## RELIEVING ORDER

Sid  
ASHITHA JOSE B.P.Ed has joined here  
for internship on 13-6-2016 and she  
is relieved from here on 16-8-2016 F.N.  
She is very punctual and obedient.

Yours faithfully



*[Handwritten Signature]*  
16/8/16  
officer  
Head Master  
St. Thomas H.S.  
Thottumukkam



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

## First record of *Menemerus marginatus* (Kroneberg, 1875) (Araneae: Salticidae: Chrysillini) from India

Rishikesh Tripathi<sup>1</sup>, Ashish Kumar Jangid<sup>2,3</sup>, Manju Siliwal<sup>2</sup>, Sutirtha Dutta<sup>2</sup> and Ambalaparambil Vasu Sudhikumar<sup>1</sup>

<sup>1</sup>Centre for Animal Taxonomy and Ecology, Department of Zoology, Christ College, Irinjalakuda, Kerala, India- 680125

<sup>2</sup>Department of Animal Ecology and Conservation Biology, Wildlife Institute of India, Dehradun, Uttarakhand, India- 248001

<sup>3</sup>Corresponding author; email ashishjangid22@gmail.com

**Abstract.** The jumping spider *Menemerus marginatus* (Kroneberg, 1875) is reported for the first time from India, from the Desert National Park in Rajasthan. The male and female *M. marginatus* are redescribed from Indian specimens and the known distribution of this species, in southwestern Asia, is mapped.

**Keywords.** Desert National Park, distribution, jumping spider, Rajasthan

The genus *Menemerus* (Simon, 1868) is most diverse on the African, Asian, and European continents (Mariante & Hill, 2020). Presently this genus includes 65 species worldwide. Of these, *M. albocinctus* (Keyserling, 1890), *M. brachygnathus* (Thorell, 1887), *M. brevibulbis* (Thorell, 1887), *M. fulvus* (L. Koch, 1878) and *M. nigli* (Wesołowska & Freudenschuss, 2012) are known from India (Keyserling, 1890; Jastrzębski, 1997; Roy et al., 2016; Chatterjee et al., 2017; World Spider Catalog, 2021). During a recent *Arachnological Diversity Assessment* of the Desert National Park Wildlife Sanctuary of Rajasthan, India, three *Menemerus* spiders were collected. Later, we identified these as *M. marginatus* (Kroneberg, 1875) through the use of taxonomic keys provided by Wesołowska et al. (2011) and Bauer et al. (2015).

The known distribution of *Menemerus marginatus* includes parts of Afghanistan, Azerbaijan, Central Asia (southwestern European part of the former USSR, to include Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Iran, Pakistan, and the United Arab Emirates (Figure 1; World Spider Catalog, 2021). This new record (Figure 1: locality 32) extends the known distribution of this species in southwestern Asia to the southeast, into India. As previously suggested (Pook et al., 2009; Linder et al. 2017), climatic conditions in the Thar Desert that divides India and Pakistan are similar to those in contiguous, arid areas of southwestern Asia, and this area can be expected to harbor species previously found only to the north and west.

*all good*



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



*all for all*



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

2. A three-day camp 'SEDA 2018' (Skill Exchange for Differently Abled) was organised by BAHUSWARA (disability cell), Christ college in association with JOTHIRGAMAYA FOUNDATION, Thiruvananthapuram on 25,26 & 27th January 2018 at college seminar hall. The camp was attended by forty members including few parents of differently abled students and by visually impaired persons other than college students. Tiffany Brar, founder of Jothirgamaya Foundation and her team members Aruna, Amina & Balaraman, were the resource persons for the three-day camp SEDA 2018.



ഇതിനോടനുബന്ധിച്ച് കോളജിലെ വിനോദവികാസകരമായ 'ബഹുസ്വര' ഡിസബിളിറ്റി സെല്ലിന്റെ ആഭിമുഖ്യത്തിൽ കാഴ്ചപരിമിതർക്കായി സംഘടിപ്പിച്ച ത്രിദിന ക്യാമ്പിൽ പങ്കെടുത്തവർ.

### കാഴ്ചപരിമിതർക്കായി ത്രിദിന ക്യാമ്പ് നടത്തി

ഇതിനോടനുബന്ധിച്ച് കോളജിലെ വിദ്യാർത്ഥികളായ 'ബഹുസ്വര' ഡിസബിളിറ്റി സെല്ലിന്റെ ആഭിമുഖ്യത്തിൽ കാഴ്ചപരിമിതർക്കായി ത്രിദിന ക്യാമ്പ് നടത്തി. അധ്യാപകർ, ശാരീരിക വൈകല്യമുള്ള വിദ്യാർത്ഥികൾ, വോളന്റിയർമാർ എന്നിവരടങ്ങുന്ന ബഹുസ്വര ഡിസബിളിറ്റി സെൽ സമൂഹത്തിന് മുതൽക്കൂട്ടാവുകയാണ്. കാഴ്ചപരിമിതരായ ടിഫാനി ബ്രാർ നേതൃത്വം നൽകുന്ന 'ജോതിർഗമയ' യുമായി സഹകരിച്ച് വിദ്യാർത്ഥികൾ കമ്പ്യൂട്ടർ പരിജ്ഞാനം, വെബ് കെയർ ഉപയോഗം, വ്യക്തിത്വവികസന ക്ലാസുകൾ, ആൻഡ്രോയിഡ് ഫോൺ ഉപയോഗം, സ്പോക്കൺ ഇംഗ്ലീഷ് തുടങ്ങിയ മേഖലകളിൽ പരിശീലനം നടത്തി.

ടിഫാനി ബ്രാർ, 'ജോതിർഗമയ' ഫൗണ്ടേഷൻ നിലവിലുള്ളവർ, അരുൺ, ആമിന തുടങ്ങിയവരും ബഹുസ്വര കമ്മിറ്റിയിൽ സീ.വി. ജോസ് എന്നിവരും ക്ലാസുകൾക്കു നേതൃത്വം നൽകി. വിദ്യാർത്ഥികളായ ഫൈസൽ കെ. ലാൽ, ഷൈറോ, കെ. യു. റിജാസ്, ആദിത്യ എസ്. നായർ, കെ. അർജുൻ, മിഥുൻ ചന്ദ്രപാസൻ, അയന കെ. പ്രസാദ്, അജിഷ്, രഞ്ജിത്ത് തുടങ്ങിയവരടങ്ങുന്ന സംഘമാണ് ബഹുസ്വര ഡിസബിളിറ്റി സെല്ലിന്റെ പ്രവർത്തനങ്ങൾ നടത്തുന്നത്.

അധ്യാപകനായ ഡോ. എ.കെ. ജിബിൻ, ഡോ. നിഖ ഉവീന്ദ്രൻ, ഡോ. പി.പി. റോണിൾസൺ എന്നിവർ നിർമ്മാണങ്ങളും പ്രോത്സാഹനങ്ങളും നൽകുന്നുണ്ട്.

Fri, 02 February 2018  
[deepika.epapr.in/c/25976239](http://deepika.epapr.in/c/25976239)



Fr. Dr. Jolly Andrews  
 Assistant Professor-  
 In-charge of Principal  
 Christ College (Autonomous)  
 Irinjalakuda

ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE



# Certificate

*Handwritten signature in green ink*

Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

This is to certify that Mr./Ms. *Yeni Yasudayana*.....  
*Christ College, Trinjyala kunda*..... has undergone *25* day

of Social Work Training/ Placement at Shreyas, Sulthan Bathery, Wayanad.

*28/2/2019*  
Date

*Handwritten signature in blue ink*  
Official Seal



Executive Director



SHREYAS

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Sulthan Bathery, P.O. No. 77, Wayanad, Kerala 673502



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C. No.....

Date 12.8.2016

## RELIEVING CERTIFICATE

Kumari. Midhu K V Phy. Edn. Trainee , Christ College Irinjalakuda  
is relieved of her training in this school Wef: 12/8/2016 AN . She has availed  
Medical Leave on the following days.

1. 30 th June ½ day .
2. 19 th and 20th July 1 ½ Day.
3. August 9 th 1 day.

Vasudevan A.N.  
Headmaster  
SKHSS Anandapuram



Fr. Dr. Jolly Andrews  
Assistant Professor-  
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## KUDUMBASHREE DISTRICT MISSION, THRISSUR

STATE POVERTY ERADICATION MISSION

(Local Self Govt. Dept, Govt. Of Kerala)

Collectorate, Thrissur-3

Email: [spemtsr1@gmail.com](mailto:spemtsr1@gmail.com)

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No. 1650/A/17/KS/TSR

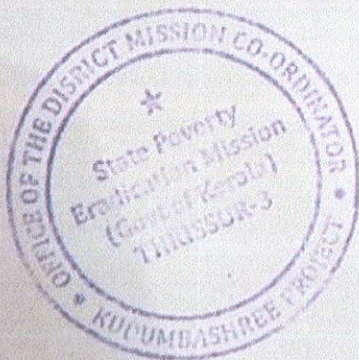
Date: 29-11-2018

### TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. MARY VINAYA JOSE (D/o) N P JOSE, Nadamkuzhy House, Pulluvazhy (PO), Perumbavoor, Ernamkulam (Dt), 683541 has been completed her 20 days concurrent field placement in Kudumbashree District Mission, Thrissur from 05-07-2018 to 22-09-2018 as part of her course in Bachelor of Social Work, 5th Semester, Christ College, Irinjalakuda.

She placed in Irinjalakkuda CDS-1 to work in liaison with Snehitha Programme During her tenure we found her as honest, hard working and well-behaved with us.

We wish all success in her future endeavors.



*[Handwritten Signature]*  
District Mission Co-ordinator  
Kudumbashree, Thrissur

Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

# SREE NARAYANA VIDYAMANDIR CENTRAL SCHOOL

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(Managed by SN Trust, Kodaly)

Ref:

Date : .....

15-08-2016

To  
The Principal  
Christ College, Irinjalakuda

Dear Sir,

Sub : B.P.E.D. (Integrated) Internship

Ref : letter No. 34/2016 dated 10-06-2016

As per the above mentioned letter, Mr. MELBIN MICHAEL, fourth year B.P.E.D. student of your College has joined this school on 13<sup>th</sup> June 2016 as *Student Teacher* as a part of Internship Programme. He has successfully completed the training till 15<sup>th</sup> August 2016 F/N and I hereby relieve Mr. MELBIN MICHAEL on 15-08-2016 A/N.

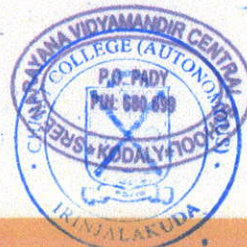
*Mr. MELBIN MICHAEL is a promising student and I wish him all the very best for his future endeavors.*

Thanking you,

Yours faithfully

For SREE NARAYANA VIDYA MANDIR CENTRAL SCHOOL, KODALY

PRINCIPAL  
  
(SATHEESH BABU T.V.)



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM SNVM



# Kuriakose Elias Service Society (KESS)

KESS Bhavan, Naickinai, Thrissur-680 001, Regd in 1974, no.39/74  
Email: kesscr@gmail.com, Website: www.kess.org.in

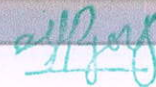


## CERTIFICATE OF APPRECIATION

This is to certify that ....*Malavika P. Peethambaran*....  
has actively contributed as a volunteer during the 'World Day of  
the Poor 2018' observance programme conducted on  
*21/11/2018*.

  
Fr. Joy Varghese CMI  
Secretary, KESS

Date *21/11/2018*





**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



ജീല മനോഹരൻ  
പ്രസിഡണ്ട്

പി.ഒ. ചിറ്റിശ്ശേരി- 680301

ഫോൺ: 0487-2658712, 9496046126

നെന്മണിക്കര ഗ്രാമപഞ്ചായത്ത്

പാലിയേക്കര, തൃശ്ശൂർ ജില്ല

തീയതി: 15/10/2017

### EXPERIENCE CERTIFICATE

This is certify that, M/s. Midhila Anilkumar had successfully completed her concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish her all the success in future endeavour.

President

Nenmanikkara Grama Panchayath



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



## The millipede genus *Klimakodesmus* Carl, 1932, with the description of a new species from Kerala state, southern India (Diplopoda, Polydesmida, Pyrgodesmidae)

MATHILAKATH DASAN ASWATHY<sup>1,3</sup>, SERGEI I. GOLOVATCH<sup>2\*</sup> & AMBALAPARAMBIL VASU SUDHIKUMAR<sup>1,4</sup>

<sup>1</sup>Centre for Animal Taxonomy and Ecology (CATE), Christ College, Irinjalakuda, Kerala, India

<sup>2</sup>Institute for Problems of Ecology and Evolution, Russian Academy of Sciences, Leninsky pr. 33, Moscow 119071, Russia

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<sup>4</sup>[spidersudhi@gmail.com](mailto:spidersudhi@gmail.com); <https://orcid.org/0000-0002-4479-4995>

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### Abstract

*Klimakodesmus* Carl, 1932 is briefly redescribed, rediagnosed, and shown to be an oligotypic genus endemic to southern India and distinct from the particularly similar genus *Pyrgodesmus* Pocock, 1892, monobasic and endemic to Sri Lanka, by several important features of peripheral and, especially, gonopodal structure. A new species, *Klimakodesmus bilobocaudatus* sp. nov., is described from Kerala state, India, differing from the sole accepted, and type species *K. graveleyi* Carl, 1932, from Tamil Nadu state, primarily by the laterally trilobate paraterga, the caudally more deeply bilobate mid-dorsal keel on ring 19, and certain minor details of the gonopodal structure.

**Key words:** *Klimakodesmus*, *Pyrgodesmus*, taxonomy, new species, India, Sri Lanka

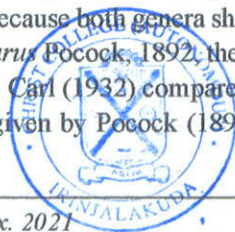
### Introduction

At present, the millipede fauna of India, however insufficiently studied, comprises 270+ nominate species or subspecies in at least 90 genera, 25 families and 11 orders (Golovatch & Wesener 2016). Of them, the large and mostly tropical family Pyrgodesmidae contains some 14 species in seven genera, including *Klimakodesmus* Carl, 1932.

The taxonomy of Pyrgodesmidae is long known to be particularly badly confused and chaotic globally, with more than 170 genera, largely monotypic, and nearly 400 species all over the tropics, marginally in Southern Europe, North Africa, southern U.S.A., Japan, Taiwan and central China (Enghoff *et al.* 2015). Progress is strongly hampered by the small size of the animals (typically 3–16 mm long), as well as the outstandingly diverse and often complex structures, both peripheral and gonopodal, which are often difficult to see, let alone describe and depict. Numerous pyrgodesmid genera remain monotypic, often based only on female or even juvenile material, and delimited using solely such somatic features as the number of body segments/rings, the shape, distribution and location of ozopores and tergal ornamentations, the structure of the paraterga etc.

*Klimakodesmus* was originally described based on a single, and type species, *K. graveleyi* Carl, 1932, originating from near Coonoor and Mudumalai, both in Tamil Nadu state, Western Ghats, southern India (Carl 1932). Verhoeff (1939) promoted *Klimakodesmus* to the rank of a monobasic subfamily, Klimakodesminae Verhoeff, 1939, but presently it is considered as a strict junior subjective synonym of Pyrgodesmidae (Hoffman 1980; [https://www.fieldmuseum.org/sites/default/files/taxon\\_table\\_5.pdf](https://www.fieldmuseum.org/sites/default/files/taxon_table_5.pdf)).

Carl (1932), when erecting his *Klimakodesmus*, compared it to *Pyrgodesmus* Pocock, 1892, the type genus of Pyrgodesmidae and also monobasic (Pocock 1892), because both genera shared numerous somatic features. He paid special attention to the identity of *Pyrgodesmus obscurus* Pocock, 1892, the type species of *Pyrgodesmus*, described from two male syntypes from Pundaluoya, Sri Lanka. Carl (1932) compared the original, rather superficial description and few schematic drawings of *P. obscurus* as given by Pocock (1892) to the excellent and richly illustrated





**URAVU**

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e-mail: uravu.india@gmail.com  
website: www.uravu.in

Ref

Date

### CERTIFICATE

This is to certify that Mr. Manujith K M student of Christ College, Irinjalakuda has successfully completed his internship in **UraVu Indigenous Science & Technology Study Centre, Thrikkaipetta, Wayanad, Kerala** during 1<sup>st</sup> Feb 2019 to 28<sup>th</sup> Jan 2019 as a part of his course.

It is observed that Mr. Manujith K M is a hardworking individual and is found enthusiastic in all the activities assigned to him.

We wish him all success in future.

4 Jan 2019



For UraVu

Thrikkaipetta

Dr. A K Abdullakutty (President)



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



മില മനോഹരൻ  
പ്രസിഡൻ്റ്

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പി.ഒ. പിറ്റിശ്ശേരി- 680301

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ഫോൺ: 0487-2658712, 9496046126

തീയതി: 15/10/2017

**EXPERIENCE CERTIFICATE**

This is certify that, M/s. Veni Vasudevan had successfully completed her concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish her all the success in future endeavour.

President

Nenmanikkara Grama Panchayath



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
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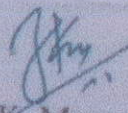
Phone: 0487-2201015, 9747201015, 9744830474, 8281478832, Web: www.punarjani.org, E-mail: punarjanipoomala@yahoo.com

## To whom so ever it may concern

This is to certify that Mr. Kiran K.K., S/o Kamalakaran BSW student, Christ College Autonomous, has successfully completed the 5<sup>th</sup> Semester field work assigned to him for the period from 30<sup>th</sup> June 2018 to 6<sup>th</sup> October 2018 in this institution. During the period of his field work he, was found punctual, hardworking and inquisitive.

We wish him every success in life.

Poomala  
06/11/2018

  
Dr. Johns K. Mangalam, Ph.D, LLB  
Managing Director.







Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

PH: 2360524



# GOVT. VOCATIONAL HIGHER SECONDARY SCHOOL VATTIYOORKAVU, THIRUVANANTHAPURAM - 13

Ref :

Date.....

## RELIEVING ORDER

This is to certify that Sri. Anandhu, BPE department, Christ College, Iringalakuda, Trissur had successively completed his training from 13.06.2016 to 13.08.2016 in this school. He has relieved from this school on 13.09.2016 AN.

His character and conduct are good.

Vattiyoorkavu  
13<sup>th</sup> August, 2016



**JASEELA A.R.**  
Headmistress  
Govt. V.H.S.S. Vattiyoorkavu



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



## The millipede genus *Klimakodesmus* Carl, 1932, with the description of a new species from Kerala state, southern India (Diplopoda, Polydesmida, Pyrgodesmidae)

MATHILAKATH DASAN ASWATHY<sup>1,3</sup>, SERGEI I. GOLOVATCH<sup>2\*</sup> & AMBALAPARAMBIL VASU SUDHIKUMAR<sup>1,4</sup>

<sup>1</sup>Centre for Animal Taxonomy and Ecology (CATE), Christ College, Irinjalakuda, Kerala, India

<sup>2</sup>Institute for Problems of Ecology and Evolution, Russian Academy of Sciences, Leninsky pr. 33, Moscow 119071, Russia

<sup>3</sup>[aswathym.das94@gmail.com](mailto:aswathym.das94@gmail.com); <https://orcid.org/0000-0002-3904-8066>

<sup>4</sup>[spidersudhi@gmail.com](mailto:spidersudhi@gmail.com); <https://orcid.org/0000-0002-4479-4995>

\*Corresponding author: [sgolovatch@yandex.ru](mailto:sgolovatch@yandex.ru); <https://orcid.org/0000-0001-7159-5484>

### Abstract

*Klimakodesmus* Carl, 1932 is briefly redescribed, rediagnosed, and shown to be an oligotypic genus endemic to southern India and distinct from the particularly similar genus *Pyrgodesmus* Pocock, 1892, monobasic and endemic to Sri Lanka, by several important features of peripheral and, especially, gonopodal structure. A new species, *Klimakodesmus bilobocaudatus* sp. nov., is described from Kerala state, India, differing from the sole accepted, and type species *K. gravelyi* Carl, 1932, from Tamil Nadu state, primarily by the laterally trilobate paraterga, the caudally more deeply bilobate mid-dorsal keel on ring 19, and certain minor details of the gonopodal structure.

**Key words:** *Klimakodesmus*, *Pyrgodesmus*, taxonomy, new species, India, Sri Lanka

### Introduction

At present, the millipede fauna of India, however insufficiently studied, comprises 270+ nominate species or subspecies in at least 90 genera, 25 families and 11 orders (Golovatch & Wesener 2016). Of them, the large and mostly tropical family Pyrgodesmidae contains some 14 species in seven genera, including *Klimakodesmus* Carl, 1932.

The taxonomy of Pyrgodesmidae is long known to be particularly badly confused and chaotic globally, with more than 170 genera, largely monotypic, and nearly 400 species all over the tropics, marginally in Southern Europe, North Africa, southern U.S.A., Japan, Taiwan and central China (Enghoff *et al.* 2015). Progress is strongly hampered by the small size of the animals (typically 3–16 mm long), as well as the outstandingly diverse and often complex structures, both peripheral and gonopodal, which are often difficult to see, let alone describe and depict. Numerous pyrgodesmid genera remain monotypic, often based only on female or even juvenile material, and delimited using solely such somatic features as the number of body segments/rings, the shape, distribution and location of ozopores and tergal ornamentations, the structure of the paraterga etc.

*Klimakodesmus* was originally described based on a single, and type species, *K. gravelyi* Carl, 1932, originating from near Coonoor and Mudumalai, both in Tamil Nadu state, Western Ghats, southern India (Carl 1932). Verhoeff (1939) promoted *Klimakodesmus* to the rank of a monobasic subfamily, Klimakodesminae Verhoeff, 1939, but presently it is considered as a strict junior subjective synonym of Pyrgodesmidae (Hoffman 1980; [https://www.fieldmuseum.org/sites/default/files/taxon\\_table\\_5.pdf](https://www.fieldmuseum.org/sites/default/files/taxon_table_5.pdf)).

Carl (1932), when erecting his *Klimakodesmus*, compared it to *Pyrgodesmus* Pocock, 1892, the type genus of Pyrgodesmidae and also monobasic (Pocock 1892), because both genera shared numerous somatic features. He paid special attention to the identity of *Pyrgodesmus obscurus* Pocock, 1892, the type species of *Pyrgodesmus*, described from two male syntypes from Pundaluoya, Sri Lanka. Carl (1932) compared the original, rather superficially seen and few schematic drawings of *P. obscurus* as given by Pocock (1892) to the excellent and highly illustrated

Dr. Eric J. Andrews  
 In-charge of Principal  
 Christ College (Autonomous)  
 Irinjalakuda

# Certificate

## Institute of Palliative Care

### Training & Research wing of



## Pain and Palliative Care Society Thrissur



Name : *Lebin Nelson*

Class : *Volunteer - SIP*

Educational Institution :

Subject : *'Palliative Care - Because I matter'*

Place : *Participated in the Essay Competition held in connection with  
World Hospice + Palliative Care Day 2018*

*Indira Gopinath*

Secretary  
Pain and Palliative Care Society

Thrissur  
Date : *13.10.2018*

*officer*



Fr. Dr. Jolly Andrews  
Assistant Professor  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

# GOVT.HIGH SCHOOL VATTENAD

KOOTTANAD.P.O,PALAKKAD

PIN-679533, PH:0466-2370084

E-mail: [gvhssvattenad@gmail.com](mailto:gvhssvattenad@gmail.com)

## RELIEVING ORDER

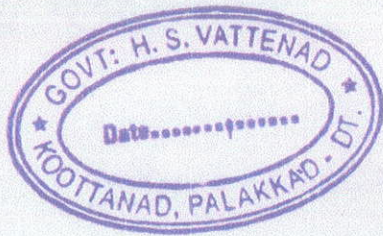
Sub: Gen.Edn: B Ed Training-Physical Education Teacher-Relieving orders issued-reg

Ref:

Sri.SHANU.P.V, who has been under B Ed training as Physical Education Teacher in this school from 13/06/2016 to 15/08/2016 is relieved off his training w.e.f the AN of 15/08/2016 to report at Christ College,Irinjalakkuda.

Vattenad

15.08.2016



Head Mistress

*G. Suseela*

Headmistress  
G.H.S. VATTENAD  
KOOTTANAD P.O.  
PIN: 679 533

*all yours*



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



Ensuring lasting change  
for children

March 4<sup>th</sup>, 2019

**TO WHOEVER IT MAY CONCERN**

This is to certify that Ms. Jesna Vincent, student of Christ College, Kerala interned with CRY Chennai - Volunteer Action Division for a period of 4 weeks, during the period Feb 1<sup>st</sup>, 2019 to Feb 28<sup>th</sup>, 2019.

Jesna worked on strengthening a children's collective in Notchikuppam, a fishing hamlet along the coast of Marina Beach. She along with a team planned and conducted sessions for the children on life skills and also assisted them with their academics with special focus on subjects the children were weak in.

It was a pleasure to work with Jesna as she was always forthcoming in taking up any responsibility assigned to her. Despite language barriers, she stepped up to the challenge and was committed to the task assigned to her.

During the course of the internship period, we found Jesna to be dedicated to the work assigned to her. We hope that this Internship experience has helped sharpen her overall understanding on child rights and she would be able to perform well in any similar future assignments and remain an advocate of child rights

We trust that Jesna will continue to keep in touch with CRY and work towards the building of a Child Rights movement.

We wish her all the Best!

With Regards,

**Michelle Baxter**  
Manager  
Volunteer Action



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# NATIONAL INSTITUTE OF PHYSICAL MEDICINE & REHABILITATION

(An Autonomous Institution Under Department of social Justice, Govt. of Kerala)

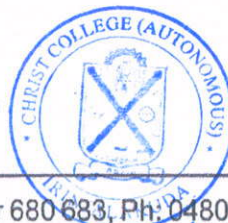
## Field work Certificate

This is to certify that Ms. Divyabharathi M S, 5<sup>th</sup> semester BSW student, Christ College Irinjalakuda was placed in National Institute of Physical Medicine and Rehabilitation (NIPMR) for concurrent field work of 19 days from 30/06/2018 to 06/10/2018. Her performance during this period was found to be very good.

Kallettumkara  
08/10/2018



Kiran C Thengamam  
Social Worker



Fr. Dr. Jolly Andrews

Assistant Professor-  
In-charge of Principal

Christ College (Autonomous)

Kallettumkara P.O., Irinjalakuda, Thrissur 680 683, Ph: 0480-2881959, 2881960, 2881961

email : [info@nipmr.org.in](mailto:info@nipmr.org.in), [nipmrin@gmail.com](mailto:nipmrin@gmail.com) Website: [www.nipmr.org.in](http://www.nipmr.org.in)

Reg No. TSR/TC/19/2016 dated 20/01/2016

## First record of *Menemerus marginatus* (Kroneberg, 1875) (Araneae: Salticidae: Chrysillini) from India

Rishikesh Tripathi<sup>1</sup>, Ashish Kumar Jangid<sup>2,3</sup>, Manju Siliwal<sup>2</sup>, Sutirtha Dutta<sup>2</sup> and Ambalaparambil Vasu Sudhikumar<sup>1</sup>

<sup>1</sup>Centre for Animal Taxonomy and Ecology, Department of Zoology, Christ College, Irinjalakuda, Kerala, India- 680125

<sup>2</sup>Department of Animal Ecology and Conservation Biology, Wildlife Institute of India, Dehradun, Uttarakhand, India- 248001

<sup>3</sup>Corresponding author; email ashishjangid22@gmail.com

**Abstract.** The jumping spider *Menemerus marginatus* (Kroneberg, 1875) is reported for the first time from India, from the Desert National Park in Rajasthan. The male and female *M. marginatus* are redescribed from Indian specimens and the known distribution of this species, in southwestern Asia, is mapped.

**Keywords.** Desert National Park, distribution, jumping spider, Rajasthan

The genus *Menemerus* (Simon, 1868) is most diverse on the African, Asian, and European continents (Mariante & Hill, 2020). Presently this genus includes 65 species worldwide. Of these, *M. albocinctus* (Keyserling, 1890), *M. brachygnathus* (Thorell, 1887), *M. brevibulbis* (Thorell, 1887), *M. fulvus* (L. Koch, 1878) and *M. nigli* (Wesołowska & Freudenschuss, 2012) are known from India (Keyserling, 1890; Jastrzębski, 1997; Roy et al., 2016; Chatterjee et al., 2017; World Spider Catalog, 2021). During a recent *Arachnological Diversity Assessment* of the Desert National Park Wildlife Sanctuary of Rajasthan, India, three *Menemerus* spiders were collected. Later, we identified these as *M. marginatus* (Kroneberg, 1875) through the use of taxonomic keys provided by Wesołowska et al. (2011) and Bauer et al. (2015).

The known distribution of *Menemerus marginatus* includes parts of Afghanistan, Azerbaijan, Central Asia (southwestern European part of the former USSR, to include Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Iran, Pakistan, and the United Arab Emirates (Figure 1; World Spider Catalog, 2021). This new record (Figure 1: locality 32) extends the known distribution of this species in southwestern Asia to the southeast, into India. As previously suggested (Pook et al., 2009; Linder et al. 2017), climatic conditions in the Thar Desert that divides India and Pakistan are similar to those in contiguous, arid areas of southwestern Asia, and this area can be expected to harbor species previously found only to the north and west.



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



ചീവ മനോഹരൻ നെന്മണിക്കര ഗ്രാമപഞ്ചായത്ത്

പ്രസിഡൻ്റ്

പി.ഒ. ഫിറ്റിംഗ് - 680301

ഫോൺ: 0487-2658712, 9496046126

തീയതി: 16/10/2017

**EXPERIENCE CERTIFICATE**

This is certify that, Mr. Lebin Nelson had successfully completed his concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish him all the success in future endeavour.



President  
Nenmanikkara Grama Panchayat



Fr. Dr. Jolly Andrews



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



## Kuriakose Elias Service Society


KESS Bhavan, Naickanal, Thrissur - 680001, Kerala  
Phone: 0487-2335516, E-mail: kesster@gmail.com

### Certificate of Experience

This is to certify that ... *Ms. Arshay P.A.* ..... has undergone internship in our organization from ..... *13/6/18* ..... to ..... *13/9/18* .....

We wish him/her all the very best.

Date : *13/9/18*

  
Fr. Joy Vattoly CMI  
Secretary

*all good*



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

**GOVT. TRIBAL HIGHER SECONDARY SCHOOL  
EDATHANA**

P.O. POROOR WAYANAD, WAYANAD-670644. Ph. 04935 266878.  
hmgthsedathana@gmail.com

**ATTENDANCE CERTIFICATE/ RELIEVING ORDER**

Sub : Internship Training Programme for B.P.Ed. Students-Reg:-  
Ref : Your letter No:34/2016 dtd 01/06/2016

Certified that Sri JISHNU K.B worked as Physical Education Teacher (Trainee) as part of B.P.Ed. Students Internship Training Programme for two months in this school from 13/06/2016 to 15/08/2016 and his character and conduct were good during that period. Relieved of his duties on the AN of 15/08/2016.



MOHAN K Headmaster  
Headmaster  
Govt. Tribal High School  
Edathana, Wayanad

*Sona*  
15/8/16

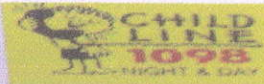
Date: 15/08/2016

Edathana, Wayanad  
Govt. Tribal High School  
Headmaster  
MOHAN K



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

# CHILDLINE Thrissur



04/12/2019

## CERTIFICATE "TO WHOM SO EVER IT MAY CONCERN"


This to certify that Mr. JERIN JOSE 6<sup>th</sup> semester BSW student from Christ College, Irinjalakuda, Thrissur has efficiently and effectively served at CHILDLINE, Thrissur from 22<sup>nd</sup> APRIL 2019 to 20<sup>th</sup> MAY 2019 as a part of their block placement.

During the tenure he gained experience in the following fields:

- Assist CHILDLINE team to conduct case enquiries and home studies
- Engaged in CHILDLINE special programmes and outreach activities
- Participated in CHILDLINE awareness programme
- Assist CHILDLINE team in documentation process
- Participated in CHILDLINE Open House

This is to further certify that the CHILDLINE 1098 service is a 24 hour free emergency phone outreach service for children in need of care and protection. This is a project supported by the Union Ministry of Women and Child Development and linking state Governments and NGOs.

During the period of his service, I found him sincere, pleasant, open to challenge and dedicated with professional attitude. We wish him all the very best in his future career endeavor.

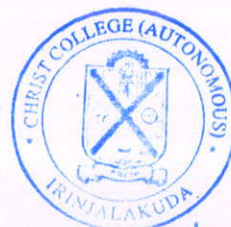
  
Fr. Johnson Chelissery  
Director, collaborative organization  
CHILDLINE, Thrissur



COLLABORATIVE ORGANISATION  
ST. CHRISTINA HOME,  
PULLAZHI, THRISSUR - 680 012

NODAL ORGANISATION  
VIMALA COLLEGE,  
CHEROOR, THRISSUR - 680 009

"A project of the Ministry of Women and Child Development (G.O.) in partnership with State Government, NGOs, Corporate sector and concerned individuals"



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



# SHREYAS

ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE

## Certificate



This is to certify that Mr./Ms. Anjana E Radhakrishnan from  
Christ College, Irinjalakuda has undergone 25 days  
of Social Work Training/ Placement at Shreyas, Sulthan Bathery, Wayanad.

28/02/2019  
Date

Official Seal



Executive Director

SHREYAS

ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE

Sulthan Bathery, P.B.No. 77, Wayanad - Kerala 673592  
email: shreyasbathery@gmail.com, web: www.shreyas.org



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

PH: 2360524



# GOVT. VOCATIONAL HIGHER SECONDARY SCHOOL VATTIYOORKAVU, THIRUVANANTHAPURAM - 13

Ref :

Date.....

## RELIEVING ORDER

This is to certify that Sri. Anandhu, BPE department, Christ College, Iringalakuda, Trissur had successively completed his training from 13.06.2016 to 13.08.2016 in this school. He has relieved from this school on 13.09.2016 AN.

His character and conduct are good.

Vattiyorkavu  
13<sup>th</sup> August, 2016



*[Handwritten signature]*

*[Handwritten signature]*

Fr. Dr. Jolly Andrews  
Assistant Professor-  
In charge of Principal  
Headmistress  
Govt. V.H.S.S. Vattiyorkavu  
Christ College (Autonomous)  
Iringalakuda



# KOTTAPURAM INTEGRATED DEVELOPMENT SOCIETY (KIDS)

(DIOCESE OF KOTTAPURAM)

(Regd No. 64/1988 under T.C.L.S.C.R. Act 12/1956)

KIDS CAMPUS, KOTTAPURAM - 680 667, KODUNGALLUR, THRISSUR DIST., KERALA, INDIA.

President

**Rt. Rev. Dr. Joseph Karikkassery**  
(Bishop of Kottapuram)

Secretary

**Rev. Fr. Paul Thomas Kalathil**  
(Diocesan Director for Social Action)

KIDS/Certificate/18/S.W. P /43

15th September, 2018

To whom so ever it may concern

This is to certify that, Ms. Amrutha A.B. 5th semester 3SW student of Christ College (Autonomous), Irinjalakuda, Kerala,, has successfully conducted her Field Placement at Kottapuram Integrated Development Society (KIDS), for a period of 20 working days. She has been successful in fulfilling the requirements of the management which she has been entrusted during her placement duration at KIDS. She has taken part in the relief work after the Kerala flood 2018. She took active participation in relief material distribution, medical camps, survey and other office work connected with the same. We wish her the very best to excel in her career and gain greater achievements.

Sincerely yours,

**Fr. Paul Thomas,**  
Executive Director, KIDS



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

SHREYAS  
ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE

Certificate

This is to certify that Mr./Ms. *Yeni Yasudayana* from  
*Christ College Trinjalakuda* has undergone *25* days  
of Social Work Training/ Placement at Shreyas, Sulthan Bathery, Wayanad.

*28/2/2019*  
Date

*[Signature]*  
Official Seal



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
Executive-in-charge of Principal  
Christ College (Autonomous)  
Trinjalakuda

SHREYAS

ORGANIZATION FOR SUSTAINABLE DEVELOPMENT AND JUSTICE  
Sulthan Bathery, P.O. No. 77, Wayanad, Kerala 671592  
www.shreyas.org.in

**Descriptions of two new species of *Macroteleia* Westwood  
(Hymenoptera: Scelionidae) from India**Abhilash Peter<sup>1</sup> and \*Rajmohana K.<sup>2</sup><sup>1</sup>Zoology Department, Christ College (Autonomous), Irinjalakuda, Kerala- 680125, India.<sup>2</sup>Zoological Survey of India, M-Block, New Alipore, Kolkata-700053, India.

(Email: mohana.skumar@gmail.com)

**Abstract**

This paper describes two new species of *Macroteleia* Westwood, viz., *M. kairalii* sp. n. and *M. shyaama* sp. n. from India. A key to species of India, based on females is also provided.

**Keywords:** Hymenoptera, Platygasteridae, new species, Scelioninae.

Received: 1 January 2020; Revised: 30 August 2020; Online: 14 September 2020

**Introduction**

The genus *Macroteleia* (Platygasteroidea: Scelionidae) was erected by Westwood (1835) based on type species *Macroteleia cleonymoides* Westwood. As per the available host data, members of this genus are egg-parasitoids of long-horned grasshoppers (Orthoptera: Tettigoniidae) (Chen *et al.*, 2013). Ashmead (1893) reared them from *Orchelimum glaberrimum* (Burmeister, 1838) (Orthoptera: Tettigoniidae), while Morgan (1901), Brues (1907), Cole (1931), Priesner (1951), Muesebeck (1977) and Kononova and Kozlov (2008) too reared them from orthopteran eggs.

With an elongate and robust habitus, *Macroteleia* is close to *Habroteleia* Kieffer and *Triteleia* Kieffer, though the absence of post marginal vein easily separates *Habroteleia*. *Macroteleia* can be differentiated from *Triteleia* by their laterally compressed sixth tergite in females; the same is dorsoventrally flattened and triangular in *Triteleia* females. In *Macroteleia* males, the apical tergite is apically emarginate or with a terminal single spine, while postero-lateral corners of male apical tergite is bispinose in *Triteleia* (Masner, 1976; Chen *et al.*, 2013).

The genus is represented by 133 valid species globally (Hymenoptera Online, 2020), of which only 8 species are reported from India (Mani and Sharma, 1982; Rajmohana, 2006). In this paper two new species *M. kairalii* sp. n. and *M. shyaama* sp. n. are described. A key to Indian species of

*Macroteleia* Westwood, based on females is also provided.

**Materials and Methods**

The present study is based on specimens collected through Malaise traps, Yellow pan traps, and Sweep net. Specimens were studied and imaged under Leica M 205A stereomicroscope, with Leica DFC 500 camera. Images were processed using extended focus montage LAS software. The holotypes and other material examined are deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, Kerala (ZSI, WGRC). Terminology followed is based on Miko *et al.*, 2007.

**Abbreviations**

A1-A12- Antennal segments; HL- Head length; HW- Head width; EH- Eye height; IOS- Inter orbital space; L- Length; *m*- Marginal vein; MW- Mesosoma width; ML- Mesosoma length; OOL- Ocello-ocular length; OD- Ocellar diameter of median ocellus; *pm*- Post marginal vein; POL- Posterior ocellar length; LOL- Lateral ocellar length; *stg*- Stigmal vein; T1-T2- Tergites of metasoma; S2-S6- Sternites of metasoma; W- Width.

**Results**

**Key to the species of genus *Macroteleia* Westwood from India based on females**  
1. Propodeum divided into two separate triangular lobes.....2



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



Protecting and empowering children since 1989

4<sup>th</sup> May 2019

### To Whomsoever It May Concern

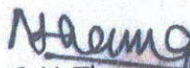
Butterflies is a registered voluntary organisation working with vulnerable groups of children since 1989. With a rights based, non-institutional approach the organisation endeavours to educate and impart life skills to vulnerable children so that they become self-reliant. Butterflies reaches out directly to over 2000 street and working children in Delhi, 6000 child survivors of tsunami in Andaman and Nicobar Islands and 1200 children living in remote areas of Uttarakhand State.

We are glad to certify that **Mr. Farhan V. S.** of Dept. of Social Work –Christ College, Irinjalakkuda, Kerala was placed for block field work with Butterflies as an intern from 1<sup>st</sup> to 26<sup>th</sup> February, 2019. During his internship period he was given orientation about Butterflies, its mission vision and various programmes. As part of her fieldwork, he was placed with the contact point: Hathi Park for developing good understanding of Butterflies' work with children.

He had assisted the Child Protection Officer and Child Rights Advocate in teaching the children, taking sessions with children at contact point and conducting child social committee meeting. He had also participated in the Community Awareness Meetings, A session on Process documentation, Casework and Family Therapeutic Care, open house, bal sabha and night outreach. By participating in all these activities, he was oriented about the key values of the organisation: children participation, right based and non-institutional approach as well as methods and principles of social work practice. During this period, he prepared two assignments: 'emotional well-being of children' and a poster on the same theme.

He was able to develop a good rapport with children, parents, community as well as the staff members. We found that Mr. Farhan V.S. to be sincere, efficient and committed to his work.

With best wishes,

  
C. V. Thomas  
Administrator  
Butterflies





**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



Addr: U-4, Green Park Extn., New Delhi-110016, India. Tel: +91-11-46471000, 26191063, 26163935 Fax: +91-11-26196117  
Email: [butterflies@vsnl.com](mailto:butterflies@vsnl.com) Website: [www.butterflieschildrights.org](http://www.butterflieschildrights.org)

Registered under Societies Registration Act 1860-(Reg. No. S-20202/89)

All donations are exempt under section 80 G vide letter No. DIT (E) / 80G/2010-2011/XX-0000/830 dt. 3/6/2010  
Office: G. D. House, Madanpura Village, R. K. Puram Sec.-1, New Delhi-110 066

## Descriptions of two new species of *Macrotelia* Westwood (Hymenoptera: Scelionidae) from India

Abhilash Peter<sup>1</sup> and \*Rajmohana K.<sup>2</sup>

<sup>1</sup>Zoology Department, Christ College (Autonomous), Irinjalakuda, Kerala- 680125, India.

<sup>2</sup>Zoological Survey of India, M-Block, New Alipore, Kolkata-700053, India.

(Email: mohana.skumar@gmail.com)

### Abstract

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The genus *Macrotelia* (Platygasteroidea: Scelionidae) was erected by Westwood (1835) based on type species *Macrotelia cleonymoides* Westwood. As per the available host data, members of this genus are egg-parasitoids of long-horned grasshoppers (Orthoptera: Tettigoniidae) (Chen *et al.*, 2013). Ashmead (1893) reared them from *Orchelimum glaberrimum* (Burmeister, 1838) (Orthoptera: Tettigoniidae), while Morgan (1901), Brues (1907), Cole (1931), Priesner (1951), Muesbeck (1977) and Kononova and Kozlov (2008) too reared them from orthopteran eggs.

With an elongate and robust habitus, *Macrotelia* is close to *Habroteleia* Kieffer and *Triteleia* Kieffer, though the absence of post marginal vein easily separates *Habroteleia*. *Macrotelia* can be differentiated from *Triteleia* by their laterally compressed sixth tergite in females; the same is dorsoventrally flattened and triangular in *Triteleia* females. In *Macrotelia* males, the apical tergite is apically emarginate or with a terminal single spine, while postero-lateral corners of male apical tergite is bispinose in *Triteleia* (Masner, 1976; Chen *et al.*, 2013).

The genus is represented by 133 valid species globally (Hymenoptera Online, 2020), of which only 8 species are reported from India (Mani and Sharma, 1982; Rajmohana, 2006). In this paper two new species *M. kairali* sp. n. and *M. shyaama* sp. n. are described. A key to Indian species of

*Macrotelia* Westwood, based on females is also provided.

### Materials and Methods

The present study is based on specimens collected through Malaise traps, Yellow pan traps, and Sweep net. Specimens were studied and imaged under Leica M 205A stereomicroscope, with Leica DFC 500 camera. Images were processed using extended focus montage LAS software. The holotypes and other material examined are deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, Kerala (ZSI, WGRC). Terminology followed is based on Miko *et al.*, 2007.

### Abbreviations

A1-A12- Antennal segments; HL- Head length; HW- Head width; EH- Eye height; IOS- Inter orbital space; L- Length; *m*- Marginal vein; MW- Mesosoma width; ML- Mesosoma length; OOL- Ocello-ocular length; OD- Ocellar diameter of median ocellus; *pm*- Post marginal vein; POL- Posterior ocellar length; LOL- Lateral ocellar length; *stg*- Stigmal vein; T1-T2- Tergites of metasoma; S2-S6- Sternites of metasoma; W- Width.

### Results

**Key to the species of genus *Macrotelia* Westwood from India based on females**  
1. Propodeum divided into two separate triangular lobes.....2



Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



**URAVU**

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Date

### CERTIFICATE

This is to certify that Mr. Manujith K M student of Christ College, Irinjalakuda has successfully completed his internship in **Uravu Indigenous Science & Technology Study Centre, Thrikkaipetta, Wayanad, Kerala** during 1<sup>st</sup> Feb 2019 to 28<sup>th</sup> Jan 2019 as a part of his course.

It is observed that Mr. Manujith K M is a hardworking individual and is found enthusiastic in all the activities assigned to him.

We wish him all success in future.

4 Jan 2019



For Uravu

Thrikkaipetta

Dr. A K Abdullakutty (President)



*Jolly Andrews*  
**Fr. Dr. Jolly Andrews**  
Assistant Professor  
in charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



ശീല മനോഹരൻ  
പ്രസിഡണ്ട്

പി.ഒ. പിറ്റിയേരി- 680301

ഫോൺ: 0487-2658712, 9496046126

നെന്മണിക്കര ഗ്രാമപഞ്ചായത്ത്

പാലിയംകര, തൃശ്ശൂർ ജില്ല

തീയതി: 15/10/2017

### EXPERIENCE CERTIFICATE

This is certify that, M/s. Veni Vasudevan had successfully completed her concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish her all the success in future endeavour.

President

Nenmanikkara Grama Panchayath



Fr. Dr. Jolly Andrews

Assistant Professor-  
In-charge of Principal  
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Irinjalakuda



# Govt. Higher Secondary School, KOTTILA

PO-Kottila, Pin:670 334, Kannur Dist.

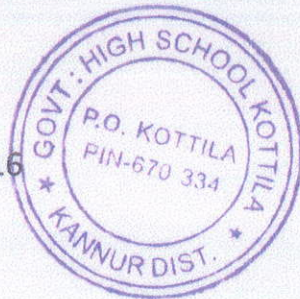
Tele: 04972 815 024 - email: kottilahss@gmail.com

This is to certify that Kumari Meenu Thomas, Christ College, Irinjalakkuda attended two months teacher training in Physical Education from 13-06-2016 to 12-08-2016 at GHSS Kottila.

During this period her work and conduct was good.

Place: Kottila

Date: 12-08-2016



*[Handwritten Signature]*  
12/8/16  
HEADMASTER  
GOVT HSS KOTTILA  
KANNUR Dist-670334



*[Handwritten Signature]*  
Fr. Dr. Jolly Andrews  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakkuda

**Redescription of *Asemonea cristata* Thorell, 1895 (Araneae: Salticidae: Asemoneinae), with notes on its synonymy and distribution**

**Переописание *Asemonea cristata* Thorell, 1895 (Araneae: Salticidae: Asemoneinae), с заметками о его синонимии и распространении**

**Puthoor Pattammal Sudhin<sup>1\*</sup>, Karunnappilli Shamsudheen Nafin<sup>1</sup>,  
John T.D. Caleb<sup>2</sup>, Ambalaparambil Vasu Sudhikumar<sup>1</sup>  
Патур Патаммал Судхин<sup>1\*</sup>, Карунапили Шамсудхин Нафин<sup>1</sup>,  
Джон Т.Д. Калев<sup>2</sup>, Амбалапарамбил Васу Судхикумар<sup>1</sup>**

<sup>1</sup> Centre for Animal Taxonomy and Ecology, Department of Zoology, Christ College (Autonomous), Irinjalakuda – 680 125, Kerala, India.

<sup>2</sup> Zoological Survey of India, Prani Vigyan Bhavan, M-Block, New Alipore, Kolkata – 700 053, West Bengal, India.

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KEY WORDS: Aranei, jumping spider, Western Ghats, Wayanad Wildlife Sanctuary.

КЛЮЧЕВЫЕ СЛОВА: Aranei, паук-скакунчик, Западные Гаты, заповедник Вэйнард.

**ABSTRACT.** *Asemonea cristata* Thorell, 1895 is redescribed on the basis of newly collected materials from the Western Ghats region, Kerala, India. *Asemonea picta* Thorell, 1895 and *A. santinagarensis* (Biswas et Biswas, 1992) are synonymised with *A. cristata*. Collecting localities of *A. cristata* are mapped as well.

How to cite this article: Sudhin P.P., Nafin K.S., Caleb J.T.D., Sudhikumar A.V. 2020. Redescription of *Asemonea cristata* Thorell, 1895 (Araneae: Salticidae: Asemoneinae), with notes on its synonymy and distribution // *Arthropoda Selecta*. Vol.29. No.2. P.251–256. doi: 10.15298/arthsel. 29.2.11

**РЕЗЮМЕ.** *Asemonea cristata* Thorell, 1895 переописан по свежесобранному материалу из региона Западные Гаты, Керала, Индия. *Asemonea picta* Thorell, 1895 и *A. santinagarensis* (Biswas et Biswas, 1992) синонимизированы с *A. cristata*. Также прокартированы точки находок *A. cristata*.

### Introduction

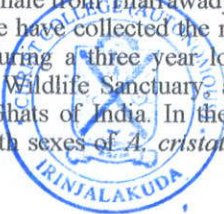
The jumping spider genus *Asemonea* O. Pickard-Cambridge, 1869 currently comprises 25 valid species distributed mainly in Africa and Asia [WSC, 2020]. Members of this genus are small, often green or yellowish, and are usually found among leaves [Wesolowska, 2009]. *Asemonea cristata* Thorell, 1895 was described from a single male from Tharawady in Burma (now Myanmar). We have collected the male and female of *A. cristata* during a three year long field survey in the Wayanad Wildlife Sanctuary, a part of the Southern Western Ghats of India. In the present paper, we redescribe both sexes of *A. cristata* on the

basis of the fresh material. Additionally, we argue that the names *Asemonea picta* Thorell, 1895 and *A. santinagarensis* (Biswas et Biswas, 1992) are to be synonymised with *A. cristata*. The current geographic distribution of the species is mapped as well.

### Materials and methods

Photos of live specimens were taken with a Canon EOS 5D Mark-III using Canon EF 100mm f/2.8 Macro USM Lens, Canon MP-E 65mm 1–5x Macro Lens and Canon MT-24EX Macro Twin Lite Flash. Spiders were collected by beating vegetation and the collected specimens were stored in 70% ethanol. Morphological examination was undertaken under a Leica M205 C stereomicroscope. The digital images were taken by means of Leica DMC4500 digital camera attached to Leica M205 C stereomicroscope, with the software package Leica Application Suite (LAS), version 4.3.0. LAS montage facility. All measurements are in mm. Measurement data for palps and legs are as follows: total length [femur, patella, tibia, metatarsus (except palp), tarsus]. The terminology follows Wanless [1980]; for leg spination the format by Bosselaers & Jocque [2000] is followed. The studied specimens are deposited in the reference collection at the Centre for Animal Taxonomy and Ecology (CATE), Department of Zoology, Christ College (Autonomous), Irinjalakuda, Kerala, India.

Abbreviations used in the text and figures are as follows: a — atrium, ALLE — anterior lateral eye, AME — anterior median eye, D — described, da — dorsal apophysis, co — copulatory opening, do — dorsal, e — embolus, f — distal flange, fa — femoral apophysis, fd — fertilization duct, pl — prolateral, PLE — posterior lateral eyes, PME — posterior median eyes, plv — prolateral ventral, rl — retrolateral, RTA — retrolateral tibial apophysis, rlv — retrolateral ventral, st — subtegulum, Pr — Pringle's organ, v — ventral, ZSI — The Zoological Survey of India, Kolkata.





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Date

## CERTIFICATE

This is to certify that **Mr Amal Babu**, student of Christ College, Irinjalakuda has successfully completed his internship in **Uravu Indigenous Science & Technology Study Centre, Thrikkaipetta, Wayanad, Kerala** during 1<sup>st</sup> Feb 2019 to 28<sup>th</sup> Feb 2019 as a part of his course.

It is observed that **Amal Babu** is a hardworking individual and is found enthusiastic in all the activities assigned to him.

We wish him all success in the future.

28 Feb 2019

Thrikkaipetta

For Uravu

Dr. A K Abdulkutty (President)



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

Chandra.Memorial.Govt.Higher Secondary School.

P.O.Kuttur,Thrissur-680 013

School code:22015

Attendance Statement

I Certified that Sri. Praveen.B.O ,B.P.Ed,Christ  
College .Irinjalakuda, Attended all working days in  
this school during the period June 13<sup>th</sup> to August  
16<sup>th</sup> year 2016

Place: Kuttur

Date: 16/8/16



*[Handwritten signature]*

Headmaster:

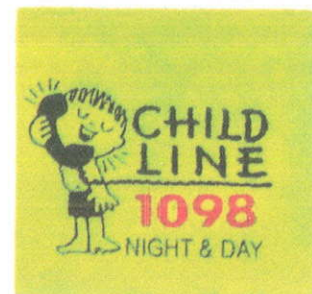
*[Handwritten signature]*

Fr. Dr. Jolly Andrews  
Assistant Professor  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

*[Red stamp: P. D. P. D. HEADMASTER CHSS KUTTUR]*

# CHILDLINE

## Thrissur



02/12/2020

### CERTIFICATE

#### "TO WHOM SO EVER IT MAY CONCERN"

This to certify that **Mr. ALAN JOHN KALLIKADAN** 6<sup>th</sup> semester BSW student from Christ College, Irinjalakuda, Thrissur has efficiently and effectively served at CHILDLINE, Thrissur from 8<sup>th</sup> February 2019 to 28<sup>th</sup> February 2019 as a part of their Concurrent Field Work.

During the tenure he gained experience in the following fields:

- Assist CHILDLINE team to conduct case enquiries and home studies
- Engaged in CHILDLINE special programmes and outreach activities
- Participated in CHILDLINE awareness programme
- Assist CHILDLINE team in documentation process

This is to further certify that the CHILDLINE 1098 service is a 24 hour free emergency phone outreach service for children in need of care and protection. This is a project supported by the **Union Ministry of Women and Child Development** and linking state Governments and NGOs.

During the period of her service, I found her sincere, pleasant, open to challenge and dedicated with professional attitude. We wish her all the best in her future career endeavor.

*Fr. Paulson Thattil*

Fr. Paulson Thattil  
Director, collaborative organization  
CHILDLINE, Thrissur

*Fr. Dr. Jolly Andrews*

COLLABORATIVE ORGANISATION  
ST. CHRISTINA HOME,  
PULLAZHI, THRISSUR - 680 012



NODAL ORGANISATION  
Fr. Dr. Jolly Andrews  
Assistant Professor  
in-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda

"A project of the Ministry of Women and Child Development (G O I) in partnership with State Government, NGOs, Corporate sector and concerned individuals"



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പ്രസിഡണ്ട്

പി.ഒ. ചിറ്റിപ്പേരി- 680301

ഫോൺ: 0487-2658712, 9496046126

നെന്മണിക്കര ഗ്രാമപഞ്ചായത്ത്

പാലിയേക്കര, തൃശ്ശൂർ ജില്ല

തീയതി: 15/10/2017

### EXPERIENCE CERTIFICATE

This is certify that, M/s. Midhila Anilkumar had successfully completed her concurrent field work as a social work trainee from 23-June- 2017 to 15- Oct-2017 in Nenmanikkara Grama Panchayat. We wish her all the success in future endeavour.

President

Nenmanikkara Grama Panchayath



Fr. Dr. Jolly Andrews

Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Injalakuda



## Spider diversity of Kerala University Campus, Thiruvananthapuram, Kerala, India

A. Asima<sup>1</sup>, G. Prasad<sup>2\*</sup> and A.V. Sudhikumar<sup>3</sup>

<sup>1,2</sup> Department of Zoology, Kariavattom Campus, University of Kerala, 695582, India,

<sup>3</sup> Christ College, Irinjalakuda, Kerala, 680125, India. Email: [asimaashrafkh15@gmail.com](mailto:asimaashrafkh15@gmail.com), [probios1@gmail.com](mailto:probios1@gmail.com), [avsudhi@rediffmail.com](mailto:avsudhi@rediffmail.com)

**ABSTRACT:** A study of spider diversity of Kerala University Campus, conducted for a period of four months revealed a total of 116 species of spiders belonging to 20 families. Among the families, Salticidae was found as the most common family and among the species *Hersilia savignyi* and *Hippasa agelenoides* were found as the most common species. *Plexipus petersi*, *Plexipus pykulli*, *Xysticus minutes* and *Tibellus elongates* were also noted as the commonly found spider species.

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**KEYWORDS:** Spider species, biodiversity, Salticidae

### INTRODUCTION

Spiders make up the order Araneae in the class Arachnida. There are currently over 39,000 described species placed in 3,642 genera and 111 families. Major contributions to Indian Arachnology were made by Pocock (1895, 1899a, 1899b, 1900a, 1900b and 1901) and Tikader (1977, 1980, 1982 and 1987) who were responsible for bringing spider studies to the notice of other researchers. India's described spider fauna consists of about 1600 species, perhaps as little as half of the total spider fauna. World-wide, more than 40,000 species of spiders have been described (Uniyal *et al.*, 2011). Although more than 1,400 species have been described from India (and with many more still to be documented), the study on the taxonomy, biology and ecology of Indian spiders remain miserably inadequate. This has largely been due to lack of expertise in this field and the absence of sufficient

literature (Sebastian and Peter, 2009). The present study of spider diversity was conducted in the Kerala University Campus, Kariavattom, laden with enchanting greenery covering about 350 acres of land.

### MATERIALS AND METHODS

#### Study Site

Kerala University Campus, Kariavattom (8°32', 8°34'N and 76°52', 76°54' E) is situated about 10 km north of Thiruvananthapuram City, houses the various teaching departments under the University of Kerala. The campus covering about 350 acres of land is located on either side of the National Highway (NH 66). The elevation of the study area is about 57m MSL. The annual temperature variation ranges from 22°C to 34°C. For the purpose of the study the entire campus has been surveyed, by dividing the area into two sites. Site 1 is the

\* Author for correspondence



# Certificate

## Institute of Palliative Care

### Training & Research wing of

## Pain and Palliative Care Society Thrissur

Name : Leban Nelson

Class : Volunteer - SIP

Educational Institution : .....

Subject : 'Palliative Care - Because I matter'

Place : Participated in the Essay Competition held in connection with  
World Hospice + Palliative Care Day 2018

*Indira Gopinath*

Secretary  
Pain and Palliative Care Society

Thrissur  
Date : 13.10.2018



*officers*



**Fr. Dr. Jolly Andrews**  
Assistant Professor  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda



Ensuring lasting change  
for children

March 4<sup>th</sup>, 2019

**TO WHOEVER IT MAY CONCERN**

This is to certify that **Ms. Jesna Vincent**, student of Christ College, Kerala interned with CRY Chennai - Volunteer Action Division for a period of 4 weeks, during the period Feb 1<sup>st</sup>, 2019 to Feb 28<sup>th</sup>, 2019.

Jesna worked on strengthening a children's collective in Notchikuppam, a fishing hamlet along the coast of Marina Beach. She along with a team planned and conducted sessions for the children on life skills and also assisted them with their academics with special focus on subjects the children were weak in.

It was a pleasure to work with Jesna as she was always forthcoming in taking up any responsibility assigned to her. Despite language barriers, she stepped up to the challenge and was committed to the task assigned to her.

During the course of the internship period, we found Jesna to be dedicated to the work assigned to her. We hope that this Internship experience has helped sharpen her overall understanding on child rights and she would be able to perform well in any similar future assignments and remain an advocate of child rights

We trust that Jesna will continue to keep in touch with CRY and work towards the building of a Child Rights movement.

We wish her all the Best!

With Regards,

**Michelle Baxter**  
Manager  
Volunteer Action



**Fr. Dr. Jolly Andrews**  
Assistant Professor-  
In-charge of Principal  
Christ College (Autonomous)  
Irinjalakuda