



## Personal information

Minju THOMAS

Date and place of birth

Gender

Nationality

Address

Phone number

e-mail

Education titles awarded

## Work experience

Dates

**From 01/02/2023-31/01/2024**

Occupation or position held  
Name and address of employer

Assegnista di Ricerca

Consiglio Nazionale delle Ricerche (CNR)

Istituto di Tecnologie Avanzate per l'Energia "Nicola Giordano" (ITAE)

Via Salita S. Lucia sopra Contesse n. 5, 98126, Messina, ITALY

Main activities

Development and Chemical-physical characterization of catalyst for the synthesis of methane, ammonia and the production green Hydrogen from biogas and ammonia

Dates

**From 01/02/2022- 31/01/2024**

Occupation or position held  
Name and address of employer

Post-Doctoral fellow (Assegno Post Dottorale)

Consiglio Nazionale delle Ricerche (CNR)

Istituto di Tecnologie Avanzate per l'Energia "Nicola Giordano" (ITAE)

Via Salita S. Lucia sopra Contesse n. 5, 98126, Messina, ITALY

Main activities

Development and Chemical-physical characterization of materials for application in electrochemical systems for the transformation and storage of energy

Dates

**From 01/12/2020- 30/11/2021**

Occupation or position held  
Name and address of employer

Post-Doctoral fellow (Borsista di Ricerca)

University of Calabria, Department of Chemistry and chemical Technology-CTC

Via Pietro Bucci 45A, 87036 Rende, Italy

Main activities

Synthesis of new electrode materials based on carbon for super capacitor and Battery ("Progetto "INNENERMAT")

Dates

**From 01/10/2019-03/11/2020 (12 months)**

Occupation or position held  
Name and address of employer

Post-Doctoral fellow (Assengista di Ricerca)

University of Calabria, Department of Environmental Engineering - DIAM

Via Pietro Bucci 45A, 87036 Rende, Italy

Main activities

- Synthesis and modification of porous adsorbents based on silica, graphitic carbon nitride, titania for H<sub>2</sub> storage and photocatalysis.
- Detailed analysis of pore characteristics of the synthesised materials for further modification.
- Documentation and publish articles based on the research

Dates

**From 17/09/2018 to 30/03/2019**

Occupation or position held

Project Assistant -III

Main activities and responsibilities

- 0.5 to 1kg level synthesis and granulation of lithium silicate based solid sorbents.
- Evaluation of sorption capacity and adsorption-desorption kinetics

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| Name and address of employer  | <ul style="list-style-type: none"> <li>Documentation of results, periodic preparation of reports and quarterly presentations</li> </ul> <p>CSIR - National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Industrial Estate P.O., Pappanamcode, Thiruvananthapuram-695019, Kerala, India</p>   |
| <b>Education and training</b>   |  |
| Dates   | <b>From 01/11/2012 to 28/12/2018</b>   |
| Title of qualification awarded  | Ph.D. in Science   |
| Principal subjects/occupational skills covered                          | <p>Chemistry, Materials Science</p> <ul style="list-style-type: none"> <li>Successfully qualified the Ph.D. course works on the topics of a) Research Methodology b) Analytical Tools c) Advanced Material Characterizations d) Advanced Photochemistry e) Sol gel chemistry f) Nanomaterials g) Porous Structures.</li> <li>Synthesis of porous and catalytic materials: N-doped Carbon, ZIF-8, ZnO, graphitic C<sub>3</sub>N<sub>4</sub>, mesoporous SiO<sub>2</sub></li> <li>Evaluation of porous and textural properties (MOFs, C, g-C<sub>3</sub>N<sub>4</sub>, mesoporous SiO<sub>2</sub>, ZnO)</li> <li>Microstructural characterisation and application studies of porous and catalytic materials for fuel cell and supercapacitor</li> <li>Mentoring students for their MS dissertation work</li> <li>Handling of analytical equipments like Automatic pore size and surface area analyser, TG/DTA analyser, FTIR, UV spectrophotometer, Rheometer, Zeta potential and particle size analyser.</li> </ul> |
| Name, address and type of organisation providing education and training | <p>CSIR - National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Industrial Estate P.O., Pappanamcode, Thiruvananthapuram-695019, Kerala, India</p> <p>Ph.D degree granted by Academy of Scientific and Innovative Research (AcSIR), CSIR- Human Resource Development Centre, (CSIR-HRDC) Campus Postal Staff College Area, Sector 19, Kamla Nehru Nagar, Ghaziabad, Uttar Pradesh- 201 002</p>   |
| Dates   | <b>From 01/06/2009 to 28/03/2012</b>   |
| Title of qualification awarded  | Master of Science in Chemistry   |
| Principal subjects/occupational skills covered                          | Chemistry including Physical, Organic and Inorganic Chemistry  |
| Name, address and type of organisation providing education and training | Mahatma Gandhi University, Priyadarshini Hills, 686 560 Kottayam, Kerala, India  |
| Mother tongue   | <b>Malayalam</b>   |
| Other languages   | <b>English, Hindi, Italian</b>   |
| Self-assessment   |  |
| European level (*)  |  |
| <b>English</b>  |  |
| <b>Hindi</b>  |  |
| <b>Italian</b>  |  |
| Organisational skills and competences                                   | Assisted in the day to day running of group activities, coordinating procurements, implementation of safety measures, management of lab chemicals and consumables.   |
| Technical skills and competences  | <p>Synthesis and characterization of organic and Inorganic catalysts and porous materials: mesoporous oxides, MOFs, carbon-based materials (e.g. graphene, graphene oxide, N-doped carbon, g-C<sub>3</sub>N<sub>4</sub>).</p> <p>Use and data handling of pore size and surface area automatic analyser</p> <p>Use and data handling of TG/DTA analyser</p>  |

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|   | Use and data handling of FTIR spectrometer<br>Use and data handling of Raman spectrometer<br>Use and data handling of UV spectrophotometer<br>Use and data handling of Rheometer<br>Use and data handling of Zeta potential and particle size analyser<br>Data handling of Scanning Electron Microscopes<br>Data handling of Transmission electron microscope<br>Use and Data handling of X-ray photo electron spectroscopy<br>Data handling of X-ray diffractometer<br>Use and Data handling of Electrochemical impedance spectroscopy<br>Use and Data handling of Temperature programmed chemisorption<br>Data handling of Atomic force microscopy  |
| Computer skills and competences   | Working knowledge on Origin, Endnote, Chemdraw, ArgusLab, Chems sketch, MS-Office, Gatan microscopy suite, XPS Peak 4.1   |
| <b>Additional information</b><br><br>Publications in International Peer Reviewed Journals | <ol style="list-style-type: none"> <li><b>Minju Thomas</b>, Balagopal N. Nair, G. M. Anilkumar, A. Peer Mohamed, K.G.K. Warriar and U.S. Hareesh, Processing of Thermally Stable 3D Hierarchical ZIF-8@ZnO Structures and their CO<sub>2</sub> Adsorption Studies, <i>J. Environ. Chem. Eng.</i>, 2016, 4, 1442-1450</li> <li><b>Minju Thomas</b>, Rajith Illathvalappil, Sreekumar Kurungot, Balagopal N. Nair, A. Peer Mohamed, Gopinathan M. Anilkumar, Takeo Yamaguchi, and U. S. Hareesh, Graphene Oxide Sheathed ZIF-8 Microcrystals: Engineered Precursors of Nitrogen-doped Porous Carbon for Efficient Oxygen Reduction Reaction (ORR) Electrocatalysis, <i>ACS Appl. Mater. Interfaces</i>, 2016, 8 (43), 29373–29382</li> <li>Suyana Panneri, <b>Minju Thomas</b>, Priyanka Ganguly, Balagopal N. Nair, A. Peer Mohamed, K. G. K. Warriar and U. S. Hareesh, C<sub>3</sub>N<sub>4</sub> anchored ZIF-8 composites: photoregenerable, high capacity sorbents as adsorptive photocatalysts for the effective removal of tetracycline from water, <i>Catal. Sci. Technol.</i>, 2017, 7, 2118–2128</li> <li><b>Minju Thomas</b>, Rajith Illathvalappil, Sreekumar Kurungot, Balagopal N. Nair, Peer Mohamed, Gopinathan M. Anilkumar, Takeo Yamaguchi, and U. S. Hareesh, Morphological Ensembles of N-doped Porous Carbon Derived from ZIF-8/Fe - Graphene Nanocomposites: Processing and Electrocatalytic Studies, <i>ChemistrySelect</i>, 2018, 3, 8688–8697.</li> <li>Vaishna Priya K., <b>Minju Thomas</b>, Rajith Illathvalappil, Shijina Kottarathil, Sreekumar Kurungot, Balagopal N. Nair, A. Mohamed Peer, Anilkumar M. Gopinathan, Takeo Yamaguchi and Hareesh Unnikrishnan Nair Saraswathy, Template assisted Synthesis of Ni, N co-doped Porous Carbon from Ni Incorporated ZIF-8 Frameworks for Electrocatalytic Oxygen Reduction Reaction, <i>New J. Chem.</i>, 2020, 44 (28), 12343-12354,</li> <li>Andreina García, Maibelin Rosales, <b>Minju Thomas</b>, Giovanni Golemme, Arsenic Photocatalytic Oxidation over TiO<sub>2</sub>-Loaded SBA-15, <i>Journal of Environmental Chemical Engineering</i>, 2021, 106443, ISSN 2213-3437, <a href="https://doi.org/10.1016/j.jece.2021.106443">https://doi.org/10.1016/j.jece.2021.106443</a></li> <li><b>Minju Thomas</b>, Svetlana Veleva, Boriana Karamanova, Antonino Brigandì, Natalia Rey-Raap, Ana Arenillas, Antonia Stoyanova, Francesco Lufrano Highly stable and reliable asymmetric solid-state supercapacitors with low self-discharge rates, <i>Sustainable Materials and Technologies</i>, <a href="https://doi.org/10.1016/j.susmat.2023.e00770">https://doi.org/10.1016/j.susmat.2023.e00770</a></li> <li>Graphene Doped Carbon-Gels and MnO<sub>2</sub> for Next Generation of Solid-State Asymmetric Supercapacitors Natalia Rey-Raap, Samantha L Flores-López, Lucía dos Santos-Gómez, Antonino Brigandì, <b>Minju Thomas</b>, Antonia E Stoyanova, Francesco Lufrano, Ana Arenillas <i>ChemElectroChem</i>, 2023, e202300161</li> <li><b>Minju Thomas</b>, Catia Cannilla, Antonino Brigandì, Isabella Nicotera, Francesco Lufrano Nanoarchitectonics of high-performance supercapacitors based on mesoporous carbon and MnO<sub>2</sub> electrodes using Aquivion electrolyte membrane <i>Journal of Alloys and Compounds</i>, 2023, 960, 170719</li> <li>S Davino, D Callegari, D Pasini, <b>M Thomas</b>, I Nicotera, S Bonizzoni, P Mustarelli, E Quartarone Cross-linked gel electrolytes with self-healing functionalities for smart lithium batteries <i>ACS Applied Materials &amp; Interfaces</i>, 2022 46(14) 51941-51953</li> </ol> |

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| Oral Presentations                  | <ol style="list-style-type: none"> <li>1. <b>Minju Thomas</b>, Balagopal N Nair, A. Peer Mohammed, K.G.K Warriar, U.S. Hareesh "Development of MCM-41/ZIF-8 composites for CO<sub>2</sub> adsorption applications", Proc. International Conference on Ceramic and Advanced Energy Materials, 14-17/12/2015, Christ University, Bangalore, p. 77.</li> <li>2. <b>Minju Thomas</b>, Rajith Illathvalappil, Sreekumar Kurungot, Balagopal N. Nair, Abdul Azeez Peer Mohamed, and U. S. Hareesh, Zeolitic imidazolate framework-8 (ZIF-8) derived porous carbon materials for electrochemical oxygen reduction reaction" in Proc. National Seminar on Neoteric Advances in Chemical Sciences (NACS-2018), 11-12/10/2018 University of Kerala, Thiruvananthapuram, pp.29-30.</li> <li>3. Rapid Synthesis of Ordered Mesoporous Carbon and Application in Batteries and supercapacitor, <b>Minju Thomas</b>, Francesco Lufrano, Isabella Nicotera, 72nd Annual Meeting of the International Society of Electrochemistry in Jeju Island, Korea from 29th August to 3th September 2021</li> <li>4. Delivered an Educational Lecture on the topic of – Metrics and methods for the evaluation of supercapacitors at the applied research levels in the meeting Renewable Energy Sources and Energy Storage Systems Application of Supercapacitors Real Projects held at Albena resort, Bulgaria from 05-08/06/2023</li> </ol>   |
| Poster Presentations                | <ol style="list-style-type: none"> <li>1. Minju Thomas, Francesco Lufrano, Isabella Nicotera, "Mesoporous Carbon as Electrode Material for Supercapacitor with Sodium ion Exchanged Aquivion Membrane International Symposium on Enhanced Electrochemical Capacitors", ISEECap 2022 from July 11st to 15th, 2022, in Bologna, Italy</li> <li>2. <b>Minju Thomas</b>, Mega Joy, S. Swetha, M. Jayasankar, A. Peer Mohamed, Balagopal N. Nair, K.G.K. Warriar and U. S. Hareesh "Synthesis of highly photo active ZnO Porous aggregates by a facile wet chemical route" Proc. 2<sup>nd</sup> International Conference on Advanced Functional Materials (ICAFM 2014), 19-21/02/2014 CSIR-NIIST, Thiruvananthapuram pp. 259-260.</li> <li>3. <b>Minju Thomas</b>, Rajith Illathvalappil, Sreekumar K, Balagopal N. Nair, A. Peer Mohamed G. M. Anilkumar, T Yamaguchi, and U. S. Hareesh "Micro meso porous architectures of N- Doped carbon for enhanced oxygen reduction reaction catalysis in alkaline fuel cells " Proc. The International Conference on Ceramics, Glass and Refractories-Emerging Innovations (CGREI-2016), 12-15/12/2016 Hyderabad, India. pp. 96.</li> <li>4. <b>Minju Thomas</b>, Suyana P., Anjana, Balagopal N. Nair, R.B. Rakhi, U. S. Hareesh "Nitrogen doped porous carbon derived from ZIF-8/C<sub>3</sub> N<sub>4</sub> composites and their capacitance studies" Proc. 8<sup>th</sup> East Asia Symposium on Functional Dyes and Advanced Materials (EAS8-2017) 20/09/2017-22/09/2017-CSIR-NIIST, Thiruvananthapuram, Kerala India. pp. 72.</li> <li>5. <b>Minju Thomas</b>, Minju N, Subha P.V, Midhun Mohan, A. Peer Mohamed, U. S. Hareesh, Balagopal N. Nair, "Processing of Solid Sorbents for CO<sub>2</sub> Capture" Proc. Carbon Capture and Its Utilisation (CCU), 14-15/12/2018, CSIR-NCL, Pune, India, PP. 17.</li> </ol> |
| Conference Contributions            | <ol style="list-style-type: none"> <li>1. Francesco Lufrano, Minju Thomas, Svetlana Veleva, Boriana Karmanova, Antonino Brigandi, Antonia Stoyanova Hybrid Supercapacitors based on Manganese oxide and Activated carbon Electrodes Using Sodium Exchange Aquivion Electrolyte Membrane ISEECap 2022 from July 11st to 15th, 2022, in Bologna, Italy</li> <li>2. Natalia Rey-Raap, Samantha L. Flores-López, Lucia dos Santos-Gómez, Minju Thomas, Francesco Lufrano, Ana Arenillas Doped Carbon Xerogels As Electrodes In Solid-State Asymmetric Supercapacitors World Conference on Carbon, Carbon '22, held at Imperial College in London, UK from 3-8th July 2022</li> <li>3. Catalytic Activation of 3D printed AlSi10Mg periodic open cellular structures (POCSs) by combined dip/spin coating method for the intensification of ammonia synthesis Cristina Italiano, Assia Saker, Massimo Laganà, <b>Minju Thomas</b>, Benjamin Hary, Steve Nardone, Lidia Pino, Alvaro Ramirez Santos, Antonio Vita</li> </ol>   |
| Honors and Awards                   | <ol style="list-style-type: none"> <li>1. UGC- Junior Research Fellowship and Lectureship in Chemistry, Awarded by Council of Scientific and Industrial Research, Human Resource Development Group, Examination Unit, CSIR Complex, Library Avenue Road, Pusa, New Delhi-110012 (3.5.2012).</li> </ol>   |
| Membership in groups / associations | <ol style="list-style-type: none"> <li>1. [REDACTED]</li> </ol>  |

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| Teaching Experience | Tutored students of chemical engineering at the Department of Chemical and Environmental Engineering (DIATIC), University of Calabria, Italy |
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| <b>Minju THOMAS</b> | Pursuant to the D.P.R. 445/2000 and subsequent modifications and additions, what I have declared is true. I authorize the processing of my personal data pursuant to DL 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali". |
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Messina, 30-01-2024

(Minju THOMAS)