

**Name : Dr. M.R. Venkatraman**

**Designation : Assistant Professor**

**Department : Physics**

**Qualification : M.Sc., M.Phil., Ph. D.,**

**Experience : Teaching: 0.4 years Research: 8 Years**

**Area of Specialization(s):** Third Generation Solar Cells, Semiconductor Nanostructures,  
Solvothermal based nanostructures synthesis

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#### Academic Qualifications

Degree	Branch	Institution / University Name	Year of Graduation
Ph.D.	Physics – Dye-sensitized solar cells	Coimbatore Institute of Technology, Coimbatore	2020
M.Phil.	Physics	Alagappa University, Karaikudi	2012
M. Sc.	Physics	Bishop Heber College, Trichy	2011
B. Sc.	Physics	St. Josephs College, Trichy	2009

#### Research Internships

Year	Description
(May 2015 – Jul 2015), (Jan 2016 – Mar 2016), (Nov 2016 – Feb 2017), (Apr 2018 – Jun 2018)	<b>Research Exchange student at Western Norway University of Applied Sciences, Bergen, Norway.</b> Supervisor: Prof. Dhayalan Velauthapillai. Under the Indo-Norwegian <b>INCP/UTFORSK mobility programmes</b> . During this trip I worked on synthesis of different nanostructures through Microwave assisted method and its performance as DSSC photoanode was studied.
<b>Jan 2018</b>	<b>Research Exchange student at University of Jaffna, Jaffna, Sri Lanka.</b> Worked at Clean Energy Laboratory at University of Jaffna, Sri Lanka for 15 days, it was supported by HRNCET mobility programme under the Research Supervisor: Prof. P. Ravirajan. During this trip I was involved in providing hands-on training to the bachelors and master's students on DSSC and I worked with them to improve the performance of the same.

*International:*

- 1) Synthesis and characterization of Nickel doped TiO<sub>2</sub> nanoparticles by green method and its performance as dye-sensitized solar cells photoanodes, Rajkumar Senthamarai, **Venkatraman Madurai Ramakrishnan**, Prabhu Murugan, Anbarasan Ponnusamy Munusamy, Suguna Kulandhaivel, International Journal of Energy Research, Just Accepted, <https://doi.org/10.1002/er.7677>, (2022). (IF- 5.1)
- 2) Rubik's cube shaped organic template free hydrothermal synthesis and characterization of zeolite NaA for CO<sub>2</sub> adsorption, Jayaprakash Madhu, **M.R. Venkatraman**, Pavithrakumar Palanichamy, Agilan Santhanam, Muthukumarasamy Natarajan, Peulakumari Ponnaian, Kathirvel Brindhadevi, Arivalagan Pugazhendhi, Dhayalan Velauthapillai, Fuel, Issue 317, Pages 123492, (2022). (IF- 6.6)
- 3) Performance of simple green synthesized Ag incorporated TiO<sub>2</sub> nanoparticles based photoanodes by doctor-blade coating as working electrodes for dye sensitized solar cells, S. Rajkumar, **M.R. Venkatraman**, Balraju Palanisamy, K. Suguna, Arivalagan Pugazhendhi, Progress in Organic Coatings, Volume 164, Pages 106697, (2022). (IF- 5.16)
- 4) Synthesis of Ag-incorporated TiO<sub>2</sub> nanoparticles by simple green approach as working electrode for dye-sensitized solar cells, S. Rajkumar, **M. R. Venkatraman**, K. Suguna, P. Karuppasamy, M. Senthil Pandian & P. Ramasamy, Journal of Materials Science: Materials in Electronics, Volume 33, Pages 4965–4973, (2021). (IF- 2.47)
- 5) Transformation of TiO<sub>2</sub> nanoparticles to nanotubes by simple solvothermal route and its performance as Dye-sensitized solar cells (DSSC) photoanodes, **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, P. Balraju, P. Selvakumar, Agilan Santhanam, Dhayalan Velauthapillai, Arivalagan Pugazhendhi, International Journal of Hydrogen Energy, Volume 45, Issue 31, Pages 15441-15452, (2020). (IF- 5.8)
- 6) UV-aided Graphene Oxide Reduction by TiO<sub>2</sub> towards TiO<sub>2</sub>/Reduced Graphene Oxide (RGO) Composites for Dye-sensitized solar cells, **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, P. Selvakumar, Agilan Santhanam, Dhayalan Velauthapillai,

Arivalagan Pugazhendhi, International Journal of Energy Research, Volume 45, Issue 12, Pages 17220-17232, (2020). (IF- 5.1)

7) Interfacing green synthesized flake like-ZnO with TiO<sub>2</sub> for bilayer electron extraction in perovskite solar cells, Selvakumar P, Nandhakumar E, Muthukumarasamy N, Agilan Santhanam, Vijayshankar Asokan, **Venkatraman Madurai Ramakrishnan**, Balraju P, Anandhi K, Dhayalan Velauthapillai, New Journal of Chemistry, Volume 44, Issue 20, Pages 8422-8433, (2020). (IF-3.6)

8) Performance of TiO<sub>2</sub> nanoparticles synthesized by microwave and solvothermal methods as photoanodes for Dye-sensitized solar cells (DSSC), **Venkatraman Madurai Ramakrishnan**, P. Selvakumar, N. Muthukumarasamy, Kristin Kvamme, G. Rajesh, S. Agilan, Arivalagan Pugazhendhi, Dhayalan Velauthapillai, International Journal of Hydrogen Energy, Volume 45, Issue 51, Pages 27036-27046, (2020). (IF- 5.8)

9) Microwave Assisted Solvothermal Synthesis of Quasi Cubic F Doped TiO<sub>2</sub> Nanostructures as Dye Sensitized Solar Cells photoanodes, **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, Arivalagan Pugazhendhi, International Journal of Energy Research, Volume 45, Issue 12, Pages 17259-17268, (2020). (IF- 5.1)

10) Perovskite Solar Cells: A Porous Graphitic Carbon-based Hole Transporter/Counter Electrode Material Extracted from an Invasive Plant Species Eichhornia Crassipes, Selvakumar P, Nandhakumar E, Muthukumarasamy N, Agilan Santhanam, Vijayshankar Asokan, **Venkatraman Madurai Ramakrishnan**, Balasundaraprabhu Rangasamy, Senthilarasu Sundaram, Dhayalan Velauthapillai, Scientific Reports, 10, Article number: 6835, (2020). (IF-3.99)

11) Microwave Assisted Solvothermal synthesis of worms-like TiO<sub>2</sub> Nanostructures in Submicron Regime as Light Scattering Layers for Dye- Sensitized Solar Cells, **Venkatraman Madurai Ramakrishnan**, Sondre Sandberg, N. Muthukumarasamy, Kristin Kvamme, P. Balraju, S. Agilan, Dhayalan Velauthapillai, Materials Letters, Volume 236, Pages 747-751, (2019). (IF-3.4)

- 12)** Size controlled synthesis of  $\text{TiO}_2$  nanoparticles by modified solvothermal method towards effective photo catalytic and photovoltaic applications, **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Vijayshankar Asokan, Dhayalan Velauthapillai, Materials Research Bulletin, Volume 97, Pages 351-360, (2018). (IF-4.6)
- 13)** A Review on the Classifications of Organic/Inorganic/Carbonaceous Hole Transporting Materials for Perovskite Solar Cell Application, Selvakumar Pitchaiya, Muthukumarasamy Natarajan, Agilan Santhanam, Vijayshankar Asokan, Akila Yuvapragasam, **Venkatraman Madurai Ramakrishnan**, Subramaniam E Palanisamy, Senthilarasu Sundaram, Dhayalan Velauthapillai, Arabian Journal of Chemistry, Volume 13, Issue 1, Pages 2526-2557, (2020). (IF- 5.1)
- 14)** Synthesis of  $\text{TiO}_2$  nanostructures by green approach as photoanodes for dye-sensitized solar cells, Rajkumar Senthamarai, **Venkatraman Madurai Ramakrishnan**, Balraju Palanisamy, Suguna Kulandhaivel, International Journal of Energy Research, Volume 45, Issue 2, Pages 3089-3096, (2021). (IF- 5.1)
- 15)** The Performance of  $\text{CH}_3\text{NH}_3\text{PbI}_3$ - Nanoparticles based – Perovskite Solar Cells Fabricated by Facile Powder press Technique, Selvakumar P, N. Muthukumarasamy, Agilan Santhanam, Vijayshankar Asokan, **Venkatraman Madurai Ramakrishnan**, Selvaraj Yuvaraj, Akila Yuvapragasam, Balasundaraprabhu Rangasamy, Senthilarasu Sundaram, Dhayalan Velauthapillai, Materials Research Bulletin, Volume 108, Pages 61–72, (2018). (IF-4.6)
- 16)** Nickel sulphide-carbon composite hole transporting material for  $(\text{CH}_3\text{NH}_3\text{PbI}_3)$  planar heterojunction perovskite solar cell, Selvakumar Pitchaiya, Muthukumarasamy Natarajan, Agilan Santhanam, **Venkatraman Madurai Ramakrishnan**, Vijayshankar Asokan, Pavithrakumar Palanichamy, Balasundaraprabhu Rangasamy, Senthilarasu Sundaram, Dhayalan Velauthapillai: Materials Letters, Volume 221, Pages 283–288, (2018). (IF-3.4)
- 17)** Investigations on Hot-wall deposited Cadmium Sulphide buffer layer for thin film solar cell, G. Balaji, R. Balasundaraprabhu, S. Prasanna, N. Prabavathy, **M.R. Venkatraman**,

Vijayshankar Asokan, N. Muthukumarasamy, M.D. Kannan, K. Sivakumaran, Materials Letters, Volume 222, Pages 82–87, (2018). (IF-3.4)

**18)** The performance of CdS quantum dot sensitized ZnO nanorod-based solar cell, D. Vinoth Pandi, N. Muthukumarasamy, S. Agilan, **M. R. Venkatraman**, Y. Akila, Dhayalan Velauthapillai, Journal of Sol-Gel Science and Technology, Volume 80, Pages 867–872, (2016). (IF- 2.3)

**19)** Structural, optical and magnetic properties of undoped NiO and Fe doped NiO nanoparticles synthesized by wet-chemical process, P.M. Ponnusamy, S. Agilan, N. Muthukumarasamy, T.S. Senthil, G. Rajesh, **M.R. Venkatraman**, Dhayalan Velauthapillai, Materials Characterization, Volume 114, Pages 166-171, (2016). (IF- 4.3)

**20)** Solution based synthesis of high yield CZTS ( $\text{Cu}_2\text{ZnSnS}_4$ ) spherical quantum dots, G. Rajesh, N. Muthukumarasamy, E.P. Subramanian, **M.R. Venkatraman**, S. Agilan, V. Ragavendran, M. Thambidurai, S. Velumani, Junsin Yi, Dhayalan Velauthapillai, Superlattices and Microstructures, Volume 77, Pages 305-312, (2015). (IF- 2.6)

#### **Presentations in Conference**

- 1. Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, C. P. Yoganand, Dhayalan Velauthapillai, **“Characterization of Plasma Assisted Chemical Vapor Deposited Hydrogenated Carbon (a-C:H) films and Its Solar Cell Characteristics”**, Indo-Norwegian International Online Conference on Functional materials for Energy, Environment and Biomedical Applications, 02-Feb-22 to 04-Feb-22. **(ORAL PRESENTATION)**
- 2. Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, **“Performance of Ag incorporated  $\text{TiO}_2$  nanoparticles prepared through simple photoreduction technique as photoanode for DSSC”**, Second International online winter school on Design, Fabrication and Application of Solar Energy Conversion Devices organized within the project “COOL LONGBOAT” funded by the Research Council of Norway, 01-Dec-21 to 03-Dec-21. **(ORAL PRESENTATION)**

3. **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, **“Plasma assisted chemical vapor deposition of hydrogenated carbons (a-C:H) as recombination barrier layer in dye-sensitized solar cells”**, AMCEHA-2019, Jaffna, Sri Lanka, 06-Feb-19 to 08-Feb-19. **(ORAL PRESENTATION)**
4. **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, **“Ag decorated TiO<sub>2</sub> nanoparticles synthesized by rapid photo deposition technique as electron transport layer (ETL's) for dye-sensitized and perovskite solar cells”**, AMCEHA-2019, Jaffna, Sri Lanka, 06-Feb-19 to 08-Feb-19. **(ORAL PRESENTATION)**
5. **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, **“Studies on Surface Treated TiO<sub>2</sub> Thin films with Thin Ceramic Barrier Layers for Dye Sensitized Solar Cells Application”**, International Conference on Sustainable Energy Technologies (ICSET 2014), 11-Dec-14 to 13-Dec-14, Department of Physics, PSG College of Technology, Coimbatore. **(ORAL PRESENTATION)**
6. **Venkatraman Madurai Ramakrishnan**, Muthukumarasamy Natarajan, Agilan Santhanam, Dhayalan Velauthapillai, **“Solvothermal Synthesis of TiO<sub>2</sub>/CNT Composites and its Physical and Chemical Properties”**, BRNS Sponsored 59<sup>th</sup> DAE-Solid State Physics Symposium, 16-Dec-14 to 20-Dec-14, Department of Advanced Studies, Vellore Institute of Technology, Vellore. **(POSTER PRESENTATION)**