

**Name**

Dr. V. Ganapathy

**Designation**

DST-INSPIRE Faculty

**Qualification**

Ph.D. (Chemical Engineering)

**Education and Experience**

2005-2007	M.Sc. (Material Science and Technology) Pondicherry University, India
2007-2008	Researcher, Department of Chemical Engineering, Pohang University of Science and Technology, South Korea
2008-2012	Ph.D. Student Department of Chemical Engineering, Pohang University of Science and Technology, South Korea
2012-2013	Postdoc Researcher SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, South Korea
2013-2015	Postdoc Researcher School of Chemical Engineering, Sungkyunkwan University, South Korea
2015-till date	DST-INSPIRE Faculty Centre for Solar Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad, India

**Research Areas of Interest**

Novel perovskite, quantum dot and nanostructured metal oxide synthesis and its application toward renewable energies (Perovskite, Quantum-dot, Dye-solar cells), device physics related to those solar cells and transferring the technologies for developing large solar panels.

## Research Publications

- Publications: Research articles in International Journals- 19
  - National and International conferences- 12
  - Patent- 1
- Publications: **Total Impact Factors (IF) -111.3**  
**Total Citations - 411**

## List of Publications

- 1) **V. Ganapathy**, B. Karunakaran, Shi-Woo Rhee. **Improved performance of dye-sensitized solar cells with TiO<sub>2</sub>/ Alumina core-shell formation using atomic layer deposition.** *Journal of Power Sources* (2010), 195, 5138-5143. **(Top 25 Hottest Articles from April to June 2010& July to September 2010).** **(IF: 6.2) (Cited by-99)**
- 2) **V. Ganapathy**, B. Karunakaran, Shi-Woo Rhee. **Sub-micrometer-sized Graphite as a Conducting and Catalytic Counter Electrode for Dye-sensitized Solar Cells.** *ACS Applied Material & Interfaces* (2011), 3, 857-862. **(IF: 6.7) (Cited by-141)**
- 3) A. Anthonyamy, Y. Lee, B. Karunakaran, **V. Ganapathy**, Shi-Woo Rhee, S. Karthikeyan, KwangSoo Kim, Min Jae Ko, Nam-Gyu Park, M. J. Ju, JinKon Kim. **Molecular design and synthesis of Ruthenium (II) sensitizers for high efficient Dye-sensitized Solar Cells: Combined experimental and DFT-TDDFT computational studies.** *Journal of Material Chemistry* (2011), 21, 12389-12397. **(IF: 6.6) (Cited by-24)**
- 4) **V. Ganapathy**, W. Kwon, Shi-Woo Rhee. **Carbon-nanofiber counter electrodes for quasi-solid state dye-sensitized Solar Cells.** *Journal of Power Sources* (2011), 196, 10798-10805. **(IF: 6.2) (Cited by-32)**
- 5) **V. Ganapathy**, B. Karunakaran, Shi-Woo Rhee. **Amorphous Carbon Counter Electrode for Low-cost and efficient Dye-sensitized Solar Cells.** *Renewable energy* (2012), 41, 383-388. **(IF: 3.4) (Cited by-24)**
- 6) J. Kwon<sup>!!</sup>, **V. Ganapathy<sup>!!</sup>**, Y. H. Kim, K. D. Song, H. G. Park, Y. Jun, P. J. Yoo, J. H. Park. **Nanopatterned conductive polymer films as a Pt, TCO-free counter electrode for low-cost dye-sensitized solar cells.** *Nanoscale* (2013), 5, 7838-7844. **(IF: 7.3) (Cited by-23)<sup>!!</sup>Equal Contribution.**
- 7) T. Pazhanivel, V. P. Devarajan, S. Bharathi, K. Senthil, **V. Ganapathy**, K. Yong, N. Devaraj. **Systematic Investigation on the Structure and Photophysical Properties of CdSe, CdSe/ZnS QDs and their Hybrids with Beta Carotene.** *RSC Advances*. (2013), 3, 26116-26126. **(IF: 3.8) (Cited by-1)**

- 8) **V. Ganapathy**, E.H. Kong, Y.C. Park, Hyun. M. Jang, Shi-Woo Rhee. **Cauliflower-like SnO<sub>2</sub> Hollow Microspheres as Photoanode with Carbon fiber Counter Electrode for High-Performance Quantum Dot-and Dye-Sensitized Solar Cells.** *Nanoscale*, (2014), 6, 3296-3301. **(IF: 7.3) (Cited by-11)**
- 9) **V. Ganapathy**, D. W. Jung, J. Kwon, J. Choi, H. Nansra, J. H. Park, G. Ra. Yi. **Multi Functionality of Macroporous TiO<sub>2</sub> spheres in Dye-sensitized and Hybrid Heterojunction solar cells.** *Langmuir*, (2014), 30, 3010-3018. **(IF: 4.4) (Cited by-9)**
- 10) S. Venkatakrishnan, **V. Ganapathy**, E. Elamparuthi, V. Anbazhagan, **Aerobic synthesis of biocompatible copper nanoparticles: Promising antibacterial agent and catalyst for nitroaromatic reduction and C-N cross coupling reaction.** *RSC Advances*. (2014), 4, 15003-15006. **(IF: 3.8) (Cited by-6)**
- 11) K. B. A. Ahmed, S. Subramanian, A. Sivasubramanian, **V. Ganapathy**, V. Anbazhagan, **Preparation of gold nanoparticles using salicorniabrachiata plant extract and evaluation of catalytic and antibacterial activity.***SpectrochimicaActa Part A Molecular and Biomolecular Spectroscopy*. (2014), 130, 54-58. **(IF:2.3) (Cited by-16)**
- 12) H. Kim<sup>!!</sup>, **Ganapathy. V<sup>!!</sup>**, J. H. Park. **Conducting Polymer coated Non-woven Graphite-Fiber film for Dye-sensitized Solar cells: Superior Pt-and FTO-free counter electrodes.** *ElectrochimicaActa*. (2014), 137, 164-168. **(IF: 4.5)<sup>!!</sup> Equal Contribution. (Cited by-7)**
- 13) V. Chakrapani, K. H. Ayaz Ahmed, V. Vinod Kumar, **V. Ganapathy**, S. Philip Anthony, V. Anbazhagan. **A facile route to synthesize casein capped copper nanoparticles: an effective antibacterial agent and selective colorimetric sensor for mercury and tryptophan.** *RSC Advances* .(2014), 4, 33215-33221. **(IF: 3.8) (Cited by-2)**
- 14) J. K. Kim<sup>!!</sup>, **V. Ganapathy<sup>!!</sup>**, N. Heo, D. H. Wang, J. H. Park. **Efficient Hole Extraction from Sb<sub>2</sub>S<sub>3</sub>Heterojunction Solar Cells by the Solid transfer of Pre-formed PEDOT: PSS film.** *Physical Chemistry C*. (2014), 118, 22672-22677. **(IF: 4.7)<sup>!!</sup> Equal Contribution. (Cited by-8).**
- 15) K. B. A. Ahmed, S. Subramanian, **V. Ganapathy**, N. Hari, A. Sivasubramanian, V. Anbazhagan, **B-siosterol-D-glucopyranoside Isolated from Desmostachyabipinnata mediate Photoinduced Rapid Green Synthesis of Silver Nanoparticles.** *RSC Advances*. (2014), 4, 59130-59136. **(IF: 3.8) (Cited by-2)**
- 16) **Ganapathy. V.**, S. Yu, D. H. Wang, W. I. Lee, J. H. Park. **Facile Control of Intra-and Inter particle Porosity in Template-Free synthesis of Size-Controlled Nanoporous TiO<sub>2</sub> beads for Efficiency Organic-Inorganic Heterojunction Solar Cells.** *Journal of Power Sources*. (2015), 279, 72-79. **(IF: 6.2) (Cited by-1)**

- 17) C. J. Mo, **V. Ganapathy**, M. Kim, J. H. Park. **Self-organized Formation of Embossed Nanopatterns on various Metal Substrates: Application To Flexible Solar Cells.** *ElectrochimicaActa*. (2015), 176, 636-641. **(IF: 4.5)** **Equal Contribution.**
- 18) H. Kim, **V. Ganapathy**, D. H. Wang, J. H. Park. **Large Area Platinum and Fluorine-doped Tin Oxide-free Dye sensitized Solar Cells with Silver-Nanoplate Embedded Poly(3,4-Ethylenedioxythiophene) Counter Electrode.** *Electrochimica Acta*. (2016), 187, 218-223. **(IF: 4.5)** **Equal Contribution.**
- 19) K. Zhang, L. Wang, J. K. Kim, M. Ma, **V. Ganapathy**, C. L. Lee, K. J. Kong, H. Lee, J. H. Park, **Three-phase Interfaces of Titanium Dioxide Nanoparticles-Water for Highly Efficient Co-Catalyst-Free Photocatalytic Hydrogen Generation.** *Energy & Environmental Science*. Accepted, DOI: 10.1039/C5EE03100A. **(IF: 20.5)**

#### Patent:

- 1) Shi-Woo Rhee, KarunagaranBojan, **GanapathyVeerappan**, Hye-Min Ra, “**Dye-sensitized solar cell including metal oxide of core shell structure**”.Korean Patent No: 10-1079413 (2011). Link below: [http://search.wips.co.kr/Kor\\_Search/Doc/KR/KR\\_doc\\_type1.asp?wkey=KR20110051890A\\_P&HL=%u00C774%u00C2DC%u00C6B0%7C%7C](http://search.wips.co.kr/Kor_Search/Doc/KR/KR_doc_type1.asp?wkey=KR20110051890A_P&HL=%u00C774%u00C2DC%u00C6B0%7C%7C)

#### Conference Presentation

##### Oral Presentation:

- 1) **V.Ganapathy** , B. Karunagaran and Shi-Woo Rhee,“**Improved performance in Dye sensitized Solar cells Employing Alumina modified TiO<sub>2</sub>photoelectrodes**” 19<sup>th</sup> International Photovoltaic Science and Engineering Conference and Exhibition (19<sup>th</sup> PVSEC). (09-13<sup>th</sup> November, 2009), ICC- Jeju, Korea.
- 2) Shi-Woo Rhee, **V.Ganapathy** , and B. Karunagaran” “**Atomic layer deposition of thin Al<sub>2</sub>O<sub>3</sub> barrier layers for efficient dye sensitized solar cells**” 9<sup>th</sup> International Conference on Atomic Layer Deposition (AVS). (19-22<sup>nd</sup> July, 2009), California, USA.
- 3) **V.Ganapathy** , B. Karunagaran and Shi-Woo Rhee, “**Low temperature spray coated Nano-carbon counter electrode for Dye sensitized solar cells**” International Union of Materials Research Societies- International Conference on Electronic Materials (IUMRS-ICEM 2010). (22-27<sup>th</sup> November, 2010), Kintex- Seoul, Korea.

- 4) **V.Ganapathy** , B. Karunagaran and Shi-Woo Rhee“**Flexible Carbon Counter electrode for low cost and efficient Dye-sensitized solar cells**” Korean Institute of Chemical Engg. Conference (KiChe). 20-22<sup>th</sup> October, 2010), Daejeon, Korea.
- 5) **V.Ganapathy** , H. Nansra, K. Zhang, J. H. Park, “**Stibnite sensitized Hollow cubic TiO<sub>2</sub> for high performance Heterojunction solar cells**” 3<sup>rd</sup> International conference on Semiconductor Sensitized and Quantum Dot Solar cells. (9-11<sup>th</sup> June, 2013), Granada, Spain.

#### Poster Presentation:

- 1) **V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee“**Al<sub>2</sub>O<sub>3</sub> coated TiO<sub>2</sub> Electrodes for Efficient Dye Sensitized Solar Cells**” The 4<sup>th</sup> Korea-Japan Bilateral workshop on Dye-sensitized and Organic solar cells. (24-25<sup>th</sup> August, 2009), Hanyang University, Seoul, Korea.
- 2)**V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee. “**High performance Graphite counter electrode for dye-sensitized solar cells**”Korean MRS 2009. (05-06<sup>th</sup> November, 2009), POSTECH, Pohang, Korea.
- 3) **V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee. “**Submicron size graphite as a counter electrode electrocatalyst for highly efficient dye-sensitized solar cells**”18<sup>th</sup> International conference on Photochemical conversion and storage of solar energy (18<sup>th</sup> IPS). (025-30<sup>th</sup> October, 2010), Korea University, Seoul, Korea.
- 4).**V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee. “**Carbon Nanofiber on flexible polymer substrates for efficient dye-sensitized solar cells**”. 9<sup>th</sup> Korea-Japan symposium on Materials & Interfaces (31-03<sup>th</sup> Oct-Nov, 2010), Yeosu, Korea.
- 5) **V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee. “**Flexible polymer substrates for Carbon-nanofiber counter electrode catalyst on dye-sensitized solar cells**” Proceedings of the 12<sup>th</sup> Cross Straits Symposium on Materials, Energy and EnvironmentalEngineering. (17-18<sup>th</sup> Nov,2010), Pohang, Korea.
- 6) **V.Ganapathy**, B. Karunagaran and Shi-Woo Rhee. “**Flexible Carbon-Nanofiber counter electrode for Quasi-solid state dye-sensitized solar cells**” Material Research Society (2011MRS Spring meeting). (25-30<sup>th</sup> April, 2011), Moscone West convention center, San Francisco, USA.
- 7) J. Kwon, **V. Ganapathy**, Y. H. Kim, Y. Jun, P. J. Yoo, J. H. Park. “**Nanopatterned conductive polymer films as a Pt, TCO-free Counter electrode for Low-cost dye- sensitized solar cells**” Material Research Society (2013MRS Fall meeting). (1-6 Dec, 2013), Moscone Hynes Convention Center, Boston, Massachusetts, USA.

#### Affiliation to Professional societies

Electrochemical Society (ECS)

### **Awards and Honors**

- 1 2003/04 – First Prize in College Science day competition in B.Sc. (UG)
- 2 2003/04 – Second Prize in College Poster presentation in B.Sc. (UG)
- 3 2006/07 – Best Research Project award in M.Sc. (PG)
- 4 2009/10 – Best Poster presentation award in 9th-Korea-Japan symposium on Materials & Interfaces in Ph.D., Oct-31 to Nov 3, 2010, Yeosu, S.Korea
- 5 2012/14 – Awarded Sungkyunkwan Advanced Institute Postdoctoral Fellowship, Suwon, S. Korea.
- 6 2014/15– Awarded BK21 Postdoctoral Fellowship in Sungkyunkwan University, Suwon, S. Korea
- 7 2015 – Awarded DST-INSPIRE Faculty Award.

### **Contact Information**

Centre for Solar Energy Materials, ARCI

Balapur, Hyderabad

Tel: 91-40-24452466

E-mail: ganapathy.inspire@project.arci.res.in