

**Dr. Mahesh Kumar Gangishetty**

Rowland Foundation Research Scholar (2017-18)

Postdoctoral Fellow

Rowland Institute, Harvard University

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*Educational Details*

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**PhD Chemistry** **2012 – 2017**

University of Saskatchewan, Canada

**M.Sc., Chemistry** **2008 – 2010**

IIT (Indian Institute of Technology) Roorkee, India

*Research Experience*

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**1) Postdoctoral: Excitonic Materials for Device Applications (Jan-2017 – Now)**

Harvard University, Rowland Institute

PI: Dr. Daniel N. Congreve

- Perovskite light emitting diodes
- Plasmonic upconversion *via* molecular triplet states

*Key skills:* Material (Quantum dots) synthesis, device engineering and characterization, time resolved spectroscopy using streak camera (Data collection and analysis using Igor Pro, MATLAB), ion-beam milling (FIB, TEM lamella prep), imaging techniques (SEM, TEM, AFM), XPS, and UPS.

**2) PhD: Solar Energy Harvesting in Photovoltaic Cells and Photocatalysis (Jan 2012 – Jan 2017).**

University of Saskatchewan, Saskatoon

Advisors: Dr. Timothy L. Kelly and Dr. Robert W. J. Scott

- Light harvesting in dye sensitized solar cells (DSSCs) using plasmonic M@SiO<sub>2</sub> nanotriangles.
- Perovskite sensitized solar cells (PSSCs).
- Light harvesting applications are explored in Suzuki cross-coupling reactions using Au@Pd plasmonic nanotriangles.
- Plasmonic enhancement in Pd catalysis by X-ray absorption studies using synchrotron radiation.

*Key skills:* Fabrication and characterization of solar cells (DSSCs, PSSCs), SEM, TEM, XRD, physical vapor deposition techniques and analysis of X-ray absorption spectra (EXAFS, XANES).

**3) Project fellow: Antibacterial Activity of ZnO Nanoparticles (Nps) on *E. Coli* (July 2010 – Nov 2011).**

Indian Institute of Technology, Roorkee

Advisor: Dr. Raj K. Dutta

- Antibacterial activity of ZnO NPs on *E. coli* (K12 strain) by studying the role reactive oxygen species (ROS).
- ZnO NPs with different capping agents (bio compatible and bio-toxic).

*Key skills:* Bacterial culturing, synthesis and characterization of nanoparticles and imaging techniques.

**4) Master's thesis: Degradation of a Pesticide (Monocrotophos) in Different Soils (Jan 2010 – May 2010).**

Indian Institute of Technology, Roorkee

Advisor: Dr. Bina Gupta

- The degradation rate, degradation mechanism and degraded products of monocrotophos

*Key skills:* HPLC and GC-MS.

**5) Summer project: Analysis of Ultra-Trace Impurities in High Purity Metals Using ICP-MS (May 2009 – July 2009).**

BARC - NCCCM, Hyderabad

Advisor: Dr. Sunil J. Kumar

- Analyzing the trace impurities in ultrapure (99.999%) metals using matrix vitalization method.

*Key skills:* Working in “clean labs” and ICP-MS analysis.

*Research Publications and Conference Presentations*

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**Publications:**

Total Citations: **1000**

*h*-index = **11** (google scholar)

(Note: \* is the corresponding author)

19) Moritz H. Futscher, **Mahesh K. Gangishetty**, Daniel N. Congreve and Bruno Ehrler\* *Submitted*.

18) **Mahesh K. Gangishetty**, Daniel N. Congreve\* *Science China Chem.*, **2019**, 62, 1 (*Commentary, invited*).

17) Samuel N. Sanders, **Mahesh K. Gangishetty**, Matthew Y, Sfeir, Daniel N. Congreve\*. *J. Am. Chem. Soc.*, **2019**, 141, 9180.

16) **Mahesh K. Gangishetty**, Samuel N. Sanders, Daniel N. Congreve\*. *ACS Photonics*, **2019**, 65, 1111. *Listed among 20 most downloaded articles in April-June 2019.*

15) Shaocong Hou<sup>†</sup>, **Mahesh. K. Gangishetty**<sup>†</sup>, Qimin Quan\*, Daniel N. Congreve\*, *Joule* (Cell Press), **2018**, 2, 2421. (<sup>†</sup> equal authorship).

*Highlighted by the Editor in Joule 2018, 2199-2201.*

14) **Mahesh K. Gangishetty**, Shaocong Hou, Qimin. Quan, Daniel. N. Congreve\* *Novel Optical Materials and Applications*, **2018**, DOI: 10.1364/NOMA.2018.NoM2D.2. (Conference Paper).

13) **Mahesh K. Gangishetty**<sup>†</sup>, Shaocong. Hou<sup>†</sup>, Qimin Quan, Daniel N. Congreve\*, *Adv. Mater.* **2018**, 1706226. (<sup>†</sup> equal authorship).

*Highlighted on inside cover art*

12) Kun Jiang, Samira Siahrostami, Tingting Zheng, Yongfeng Hu, Sooyeon Hwang, Eli Stavitski, Yande Peng, James Dynes, **Mahesh K. Gangishetty**, Dong Su, Klaus Attenkofer, Haotian Wang\*. *Energy Environ. Sci.*, **2018**, DOI: 10.1039/C7EE03245E. (own collaboration on XAS).

*Highlighted in Brookhaven National Laboratory under the Department of Energy.*

11) Kun Jiang, Samira Siahrostami, Austin J. Akey, Yanbin Li Zhiyi Lu, Judith Lattimer, Yongfeng Hu, Chris Stokes, **Mahesh K. Gangishetty**, Guangxu Chen, Yawei Zhou, Winfield Hill, Wen-Bin Cai, David Bell, Karen Chan, Jens K. Nørskov, Yi Cui, and Haotian Wang\*. *Chem.* **2017**. DOI: 10.1016/j.chempr.2017.09.014. (own collaboration on XAS).

*Highlighted on cover page*

*Highlighted in science daily*

10) Kun Jiang, Priti Khare, Yande Peng, **Mahesh K. Gangishetty**, Hao-Yu Greg Lin Eli Stavitski, Klaus Attenkofer, and Haotian Wang\*. *ACS Sustainable Chem. Eng.*, **2017**, 5, 8529. (own collaboration on XAS).

9) **Mahesh K. Gangishetty**, Adriana M. Fontes, Marcos Malta, Timothy L. Kelly\*, Robert W. J. Scott\*. *RSC Adv.*, **2017**, 7, 40218.

8) **Mahesh K. Gangishetty**, Robert W. J. Scott\* and Timothy L. Kelly\*. *Dalton Trans.*, **2016**, 45, 9827.

*Listed as a hot paper*

7) **Mahesh K. Gangishetty**, Robert W. J. Scott and Timothy L. Kelly\*. *Nanoscale*, **2016**, 8, 6300.

6) **Mahesh K. Gangishetty**, Robert W. J. Scott\* and Timothy L. Kelly\*. *Langmuir*, **2014**, 30, 14352.

5) Diany Li, **Mahesh K. Gangishetty** and Timothy L. Kelly\*. *J. Mat. Chem., A.*, **2014**, 2, 19873.

4) **Mahesh K. Gangishetty**<sup>†</sup>, Kee Eun Lee<sup>†</sup>, Robert W. J. Scott, and Timothy L. Kelly\*. *ACS Appl. Mater. Interfaces*, **2013**, 5, 11044. († equal authorship).

3) R.K. Dutta\*, Bhavani P. Nenavathu, **Mahesh K. Gangishetty** and A.V.R. Reddy. *J. Environ. Sci. Health., Part A*. **2013**, 48, 871.

2) R.K. Dutta\*, Bhavani P. Nenavathu, **Mahesh K. Gangishetty**. *J. Photochem. Photobiol., B*, **2013**, 126, 105.

1) R.K. Dutta\*, Bhavani P. Nenavathu, **Mahesh K. Gangishetty** and A.V.R. Reddy. *Colloids Surf., B*. **2012**, 94, 143.

### **Conference presentations:**

8) **Mahesh. K. Gangishetty**, Shaocong. Hou, Qimin. Quan, Daniel. N. Congreve. Poster presentation at Material Research Society (MRS – Fall meetings), Boston, USA, 2018.

7) **Mahesh. K. Gangishetty**, Shaocong. Hou, Qimin. Quan, Daniel. N. Congreve. Poster presentation at Gordon Research Conference (GRC - 2018) on Colloidal Nanocrystals, Bryant University, Rhode Island, USA, 2018.

6) **Mahesh. K. Gangishetty**, Shaocong. Hou, Qimin. Quan, Daniel. N. Congreve Oral presentation at American Chemical Society - Conference (ACS-Fall Meetings), Boston, USA, 2018.

5) **Mahesh K. Gangishetty**<sup>a</sup>, Adriana M. Fontes<sup>b</sup>, Marcos Malta<sup>b</sup>, Timothy L. Kelly<sup>a\*</sup>, Robert W. J. Scott<sup>a\*</sup>. Poster presentation at Gordon Research Conference (GRC - 2016) on Noble Metal Nanoparticles, South Hadley, Boston, USA, 2016.

4) **Mahesh K. Gangishetty**, Robert W. J. Scott, Timothy L. Kelly\*. Oral presentation at Canadian Society of Chemistry (CSC - 2016) Conference and Exhibition, Halifax, Canada, 2016.

3) **Mahesh K. Gangishetty**, Robert W. J. Scott, Timothy L. Kelly\*. Oral presentation at 1<sup>st</sup> graduate symposium GSS-2015 University of Saskatchewan, Saskatoon, Canada, 2015.

2) **Mahesh K. Gangishetty**, Kee Eun Lee, Robert W. J. Scott, and Timothy L. Kelly\*. Oral presentation at Canadian Society of Chemistry (CSC - 2014) Conference and Exhibition, Vancouver, Canada, 2014.

1) Bhavani P. Nenavathu, **Mahesh K. Gangishetty** and R.K. Dutta\*. Poster presentation at Indian Institute of Technology – Roorkee, India, 2011.

### **Patents:**

3) "Photon Upconversion"  
United States Patent Application, in progress

2) "Single Emission White Perovskite Light Emitting Diode"  
United States Provisional Application 62/586,846, Filed 11/15/2017

- 1) “Light-Emitting Device Structures for Blue Light and Other Applications”  
United States Provisional Application 62/586,837, Filed 11/15/2017

### *Scientific Service*

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- Active **reviewer** of many scientific journals
  - Reviewed over 40 articles from high profile journals including, *Advanced Materials*, *Joule (cell press)*, *Applied Physical Letters*, *Research (by Science Publishing groups, SPJ)* and *Solar Energy Materials and Solar Cells*.

### *Academic Awards*

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- Received an award titled “**Rowland Foundation Research Scholar**”, and a grant money of **\$100,000 for research**.
- One of the **best oral presenters** award at GSS-2015 symposia conducted at University of Saskatchewan, 2015.
- I scored top ranks in several all India level examinations conducted by IITs
  - I was among top **8%** in **GATE-2010** examination for Master’s in Technology education.
  - I stood among top **5%** of qualified candidates in Joint Admission to M.Sc. (JAM '2008) Examination.
- Served as a **convener** for a technical festival Cognizance’10 organized by Department of Chemistry at IIT Roorkee.

### *Mentoring Experience*

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- *Mentored Undergrads*
  - Current: **Abdeljaleel Ismail**. *Harvard Undergraduate, Freshman/Sophomore*
  - Feb’ 2018: **Laura Zharmukhametova**. *Harvard Undergraduate, Freshman*
  - March’ 2017 – Jan’ 2018: **Darby LaPlant**. *Harvard Undergraduate, Junior*
  - Summer’ 2017: **Ethan Vo**. *Harvard Undergraduate, Sophomore*
  - 2016- 2017: **William Barrett**. *University of Saskatchewan, 4<sup>th</sup> year*
  - 2014-2015: **Syed Naqvi**. *University of Saskatchewan, 4<sup>th</sup> year*
- *As Teaching Assistant, 2012- 2016 (4.5 Yrs)*
  - Chem 112: 1<sup>st</sup> year general chemistry labs
  - Chem 115: 1<sup>st</sup> year physical chemistry Labs
  - Chem 221: 2<sup>nd</sup> year analytical chemistry Labs (Instrumentation AAS, GC and HPLC etc.)
- *Responsibilities: Pre-lab conferences, setting up the lab and supervising.*