

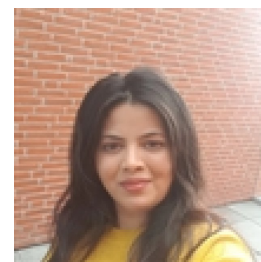
Tanya Kumari

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Currently working as a postdoctoral researcher at the NanoSYD, The Mads Clausen Institute, University of Southern Denmark (SDU), Denmark. I have completed my Ph.D. at the Department of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology (UNIST), South Korea. Tanya does research in Experimental Physics, Materials Physics, and Materials Science. Her current project focuses on organic solar cells.

#### Employment History

Postdoctoral Research Associate at The Mads Clausen Institute, NanoSYD, University of Southern Denmark: Sonderborg, Denmark

Prof. Morten Madsen

OCTOBER 2020 — PRESENT

Responsibility: Carry out independent research work on organic solar cells as well as guide junior lab members. Projects: bilayer organic solar cells (OSCs), investigation of effect of impurities level in non-fullerene acceptors on the stability and device performance of OSCs.

Postdoctoral Research Associate at Ulsan National Institute of Science and Technology (UNIST), Republic of Korea  
Prof. Changduk Yang APRIL 2019 — SEPTEMBER 2020

#### Education

Doctoral Degree | Ulsan National Institute of Science and Technology, Ulsan, Republic of Korea  
SEPTEMBER 2014 — FEBRUARY 2019

Average transcript score: 96.00. Ph.D. thesis title: Investigation of Efficient Organic Solar Cells through Optimized Morphology Control and Understanding of Mechanisms. Ph.D.'s thesis: Investigation of Efficient Organic Solar Cells through Optimized Morphology Control and Understanding of Mechanisms.

BS-MS Dual Degree | Indian Institute of Science Education and Research, Pune, India  
SEPTEMBER 2009 — MAY 2014

Average transcript score: 8.7/10 with major course credits in Physics. During this period, I did several research projects in the field of material science, astronomy, and game theory. Master's thesis: Synthesis of Metal Oxides for Energy and Environmental Applications.

#### Research Experience

Postdoctoral Research Associate | Ulsan National Institute of Science and Technology (UNIST)

Prof. Changduk Yang APRIL 2019 — SEPTEMBER 2020

Have worked on the air-processable spontaneously spreading (SS) film formation method to fabricate low-cost, high performance solar cell devices in the ambient environment. I have also worked on bilayer architecture-based organic solar cells to unveil the charge transport dynamics in presence of ferroelectric additives. Have trained juniors in thin-film fabrication and characterization techniques.

Doctoral Degree | Ulsan National Institute of Science and Technology (UNIST)

Prof. Changduk Yang SEPTEMBER 2014 — FEBRUARY 2019

Have worked in the field of organic solar cells covering topics from material selections to the device fabrication strategies. My major work includes: investigation of macromolecular additives for morphology control, extending absorption window of solar devices through ternary blending (ternary solar cells), study of material-solvent interaction parameters for exploring non-halogenated solvent processing, and incorporation of ferroelectric polymer additives for electric field generation to facilitate efficient charge transport in solar devices.

Research Internship | National Chemical Laboratory (NCL), Pune, India

Prof. Satishchandra B. Ogale JULY 2013 — MAY 2014

Pursued BS-MS final year project in the field of energy conversion and storage. I have worked on fabrication of efficient low cost solar cells (dye sensitized solar cell, quantum dot sensitized solar Cell and, solid state solar cell). I have also worked on synthesis of metal oxides. For example, I have synthesized mesoporous single crystalline TiO<sub>2</sub> for high Li<sup>+</sup> ions insertion activity required in lithium ion battery.

Summer Internships | IUCAA and NCL, Pune, India  
2010 — 2013

Summer internships (Astronomy): "observational astronomy and basic astrophysics in stellar evolution" under Dr. Sri Anand in 2010 and "spectral reduction and photometry of elliptical and rotating galaxy, NGC 2992" under Dr. Vijay Mohan in 2011 at IUCAA, Pune. Summer internships (Material Science): "synthesis of nanoporous composite photocatalysts like Cu<sub>2</sub>O/C<sub>3</sub>N<sub>4</sub> for photo-degradation of dyes and Fe<sub>2</sub>O<sub>3</sub>/SiO<sub>2</sub>/C<sub>3</sub>N<sub>4</sub> (magnetically separable) for water splitting" under Prof. Satishchandra Ogale at NCL, Pune in 2012 and 2013, respectively.

#### Skills

- Extensive experience in various thin-film device fabrication methods like spin coating, screen printing, solution processing techniques, plasma treatment, thermal evaporation and SILAR method.
- Expertise in fabrication of organic solar cells in various device architecture such as conventional, inverted, bilayer etc.
- Capable of inorganic nanomaterials synthesis.

- Possesses deep experience in various characterization techniques such as XRD, SEM, TEM, EDAX, GIWAXS, IV measurements (solar simulator), UV-Vis/PI spectroscopy, electrochemical analysis.
- Good at data analysis and simulation (molecular modeling using Gview). Familiar with basic programming in C, C++, Visual Basic, and HTML. Good knowledge of scientific softwares like Matlab, Origin, Gaussian View 03 and others like 3ds Max.

#### Funding, Awards, Scholarships & Achievements

- Received National Research Foundation, NRF Korea Grant (#2020R111A1A01071243) in 2020.
- Awarded "24th Humantech Paper Award" by Samsung in 2018.
- Awarded "Outstanding Graduate Student Award for Excellence" with an honorary plaque by the Department of Energy Engineering, UNIST in 2018 as well as 2017.
- Awarded "Outstanding Graduate Student Award" by Department of Energy Engineering, UNIST in 2016.
- Received RATA scholarship from UNIST, Republic of Korea (September 2014-February 2019).
- Received Inspire Scholarship by DST, Govt. of India (August 2009-June 2014).
- Qualified IIT-JEE 2009 and AIEEE 2009.

Editorial Board, Conferences & Presentations • Guest Editor of Special issue "Advances in Efficient Organic Solar Cells" of *Energies* (ISSN 1996-1073). Presentation at International conference on Science and Technology of Synthetic Metals 2018 at BEXCO, Busan, Republic of Korea. • Oral Presentation at International conference on Science and Technology of Synthetic Metals 2018 at BEXCO, Busan, Republic of Korea. • Oral Presentation at Advances in Functional Materials 2017 at University of California, Los Angeles Campus, USA. • Oral Presentation at 2nd Asian-European Symposium on Organic Optoelectronics 2015 at Royal Society of Edinburgh, UK. • Poster Presentation in 45th IUPAC World Chemistry Congress 2015 at BEXCO, Busan, Republic of Korea.

#### PROJECTS

- Organic solar cells (bulk-heterojunction and bilayer architectures)
- Ternary solar cells (conventional and inverted device structures)
- Dye-sensitized and quantum dot-sensitized solar cells
- Synthesis of metal oxides for lithium-ion battery and dye degradation
- Synthesis of magnetically separable photocatalysts for water splitting