

# LAXMIKANT PATHADE

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## EDUCATION

- **Syracuse University** 2013-2017  
PhD (Materials Chemistry)  
**Research Advisor:** Prof. Mathew M. Maye  
**Thesis Topic:** "Design and Synthesis of Transition Metal Core/Shell Nanoparticles with Hollow Internal Microstructures and Corrosion Resistant Properties"
- **Institute of Chemical Technology, Mumbai** 2009-2013  
Bachelor of Technology (Chemistry)  
Minors in Chemical Engineering, Organic Colorants

## WORK & RESEARCH EXPERIENCE

- Graduate Researcher at Syracuse University** 2013-present
  - My doctoral studies focus mainly on the synthesis and characterization of transition metal core/shell nanoparticles that had unique properties such as internal voids and novel corrosion resistant properties. (Please see CV)
  - During my graduate studies, I published 3+ peer reviewed journal articles, filed 2 patents, and presented my work in regional and national conferences (~12 talks/posters).
  - Some of the other topics that I worked on are - Study of Oxidation Behavior in Transition Metal based Structured Core/Alloy Nanoparticles (CA-NPs); Corrosion Resistant Stainless Core/Shell Nanoparticles (corrosion paper); Synthesis of Novel Fe/Ni CA-NPs with Asymmetric Internal Voids; Radial Multi-Layered Transition Metal Shell Deposition on  $\alpha$ -Fe NPs (patent); Characterization of Lead Halide Perovskite Nanocrystals. (published in ACS Nano, filed a patent); Silica Coating and Amine Functionalization of Magnetic CA-NPs (commercial project); Discrete Dipole Approximation Simulation on core/shell nanoparticle systems.
- Administrator at the X-ray Facility at Syracuse University** 2014-present
  - As a graduate facility admin, I oversee day to day operations of the powder X-ray diffractometer at the facility.
  - Responsible for new user training, queue management, data analysis, specialized sample processing, scheduling maintenance visits, Haskris (chiller) upkeep, and instrument troubleshooting.
- Teaching Assistant at Syracuse University** 2013-present
  - Taught General Chemistry and Honors General Chemistry (CHE 107-117, 129) courses at SU. My responsibilities included holding recitations & office hours, conducting labs, & reporting student progress.
  - Developed several labs including "Synthesis of Cesium Lead Perovskite ( $\text{CsPbX}_3$ ) nanocrystals", "Comparing Optical Property of Fluorescent Compounds using Spectrometers", & "Solid State Modeling & X-ray Diffraction".
- Industrial Internships during Undergraduate Studies** 2012
  - During my undergraduate summer breaks, I interned at 2 medium sized pigment-manufacturing factories located in the industrial area near Mumbai. During this training period, I had an opportunity to observe unit operations of chemical engineering, manufacturing of reactive dyes and pigments.
  - Prepared a report on manufacturing, efficiency of units operations, with recommendations on workplace safety.

## TECHNICAL SKILLS

**Chemical Synthesis:** Nanoparticles Synthesis (Transition and Noble Metals, Nano-perovskites, Quantum Dots) Schlenk Line and Glovebox techniques • Microwave synthesis • Organic Lab Experience  
**Structural Characterization:** Powder and Single Crystal XRD (Currently work as facility admin)  
**Electron Microscopy:** TEM / HR-TEM (trained on 3 different JEOL TEMs; trained new users) • EDS (Oxford Instruments Certification) • SEM • AFM (Bruker Innova) • Optical  
**Spectroscopy:** XPS/ESCA • EDS • NMR • Raman • AA • Mass • FTIR • UV-Vis • PL  
**Technical Misc.:** Magnetization in materials • Cyclic Voltammetry • DLS-  $\zeta$  potential • Ultracentrifuge • Spin coater • Photolithography • TGA • DSC • Vernier Modules • Rotovap  
**Computational Analysis:** Discrete Dipole Approximation (DDA) • knows about FDTD  
**Softwares:** Origin • Plotly • Datagraph • Igor-Pro • ImageJ • ChemDraw • Vesta • Bruker Diffrac.Suite • CasaXPS • QUASES • Adobe Illustrator • Corel-Draw • Maya with CaDNano package  
**Languages:** C++ • PYTHON (Numpy/Scipy) • Jekyll • HTML/Markdown • Familiar with Fortran  
**Computer Misc.:** Raspberry PI • Networking basics • Wordpress/MAMP • Linux •  $\text{\LaTeX}$  • git