

Harsh Trivedi

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Date of birth: 23rd April, 1988

Sex: Male

Marital status: Married

Nationality: Indian

Research interest

Multifunctional oxides
Magnetism
Heterogeneous Materials

Scanning Probe Microscopy
Structural Characterization
Inorganic Material Synthesis

Education

M.Tech in Materials Science Programme, Indian Institute of Technology Kanpur, India (2012)

Thesis title: “**Studying effect of structural disorder on the properties of multiferroic materials**”

GPA: 9.7/10.0

M.Sc. in Materials Science, Sardar Patel University, India (2010)

Thesis title: “**Preparation and characterization of ITO thin films on glass substrate by wet chemical route**”.

GPA: 67/100

B.Sc. in Physics, Sardar Patel University, India (2008).

Overall GPA: 74/100

Major GPA: 80/100

Job Experience

Junior Researcher (PhD) at University of Duisburg-Essen, Germany (2012 till present).

Project title: **SPM studies of core-shell multiferroic nanocomposites.**

Research experience and experimental skills

- SPM techniques: Magnetic Force Microscopy (MFM), Piezoresponse Force Microscopy (PFM).
- Materials preparation by solid state reaction, PLD (Pulsed laser deposition), and wet chemical route.
- Structural characterization:
 - XRD: Phase identification, Structure refinement and space group determination using rietveld fitting.
 - Raman Spectroscopy: Investigating local charge based ordering, temperature dependent Raman spectroscopy (Using He gas-cryostat) for investigating spin-phonon coupling.

- Electrical measurement:
 - Temperature dependent conductivity and hall measurements.
 - Temperature as well as frequency dependent impedance spectroscopy.
- Magnetic measurement:
 - M/T and M/H curves using Vibrating sample magnetometry.
 - Calculation of saturation magnetic moment per formula unit.
- Thermo gravimetric analysis of oxides for various stoichiometric calculations.
- Gas chromatography of metal alkoxide sols for determination of reaction kinetics.
- Fitting and analysis of acquired data using OriginLab.
- Prepared a small research proposal related to application of multiferroic materials for magnetic Random Access Memory element, under a course titled “Multifunctional oxides: thin films and devices”.
- Attended workshops like “Advances in Materials Science”; “Characterization techniques for carbon materials” organized by bodies like JNCASR and Indian Carbon Society.

Computer skills

Operating system:

Windows 95/98/XP and above

Office application:

PowerPoint, Word, Excel

Scientific application:

Mathematica, FullProf, Labview, OriginLab, IGOR Pro, Matlab.

Language skills

- Good Proficiency in English
- Elementary knowledge of German

Awards and achievements

- Received “Best Seminar” award from Materials Science association Sardar Patel University chapter.
- Attained **GRE** score 1240, November 2007.
- Attained all India rank 100 in **GATE** (Graduate aptitude test in engineering) 2010.
- Recipient of MHRD (Ministry of human resource and development) scholarship for pursuing M.Tech at IIT Kanpur.

Relevant Courses

- Structural and magnetic properties of materials
- Electrical and dielectric properties of materials
- Introduction to nanomaterials and nanotechnology
- Multifunctional oxides: thin films and devices
- Materials characterization
- Materials Engineering

Other courses

- Interfacial aspects in Materials Science
- Microstructure and processing in metallic materials
- Introduction to polymers
- Introduction to spectroscopy
- Mechanical properties of materials
- Composite materials
- Non-destructive evaluation

References

Prof. Doru Lupascu

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Prof. Doru C. Lupascu is my current Project supervisor