

# Curriculum Vitae

## PERSONAL INFORMATION

Surname / First name : **DAGUR, Deepak**

## EDUCATION AND TRAINING:

- **Name of organization :** University of Trieste – CNR IOM  
**Laboratory :** APE-HE Beamline, Elettra Synchrotron (Trieste)  
**Title of qualification :** PhD in Nanotechnology  
**Period :** November, 2020 – Present (3 years)  
**Final degree mark :** Result-Awaited (Thesis defense to be held in May 2024)  
**Thesis title :** “Tuning of magnetoelectric coupling in multiferroic heterostructures”  
**Thesis supervisor :** Dr. Piero Torelli
- **Name of organization :** Amity University, Uttar Pradesh, India  
**Title of qualification :** Master of Science in Applied Physics  
**Period :** June, 2018 – July, 2020 (2 years)  
**Principal subjects :** Mathematical physics, Classical mechanics, Electrodynamics, Electronics, Optics, Optical Fiber and communication, Advances in Solid state physics, Quantum mechanics, Atomic and molecular physics, Nuclear physics and spectroscopy, Physics of Semiconductor devices, Impedance measurement techniques, Elements of Astronomy and Astrophysics, Basics of Thin film technology, Nuclear and particle physics, Statistical mechanics, Digital electronics and microprocessors, Material science and technology.  
**Final degree mark :** 8.73/10 CGPA (87.3%)  
**Thesis title :** “Correlations of Exchange Bias with Spin Disorder in Nanocrystalline Iron Oxides”  
**Thesis supervisors :** Dr. Ravi Kant Choubey and Dr. Samrat Mukherjee

- **Name of organization :** Govt. Gandhi Memorial Science College, University of Jammu  
**Title of qualification :** Bachelor of Science - General  
**Period :** June, 2015 – June, 2018 (3 years)  
**Final degree mark :** 62%  
**Final year project title :** “Designing of a Flashing L.E.D using 555 timer IC”  
**Laboratory :** Electronics Lab, GGM Science College Jammu  
**Thesis supervisors :** Dr. Rakesh Prasher

#### SCHOOL STUDIES:

- **Name of organization :** Kendriya Vidyalaya No. 1 AFS Jodhpur, Raj., India  
**Period :** March, 2014 – March, 2015  
**Title of qualification :** Senior School Standard in Science  
**Final certificate mark :** 72.5%  
**Major subjects :** Physics, Chemistry, & Mathematics.
- **Name of organization :** Kendriya Vidyalaya No 1 AFS Jodhpur, Raj., India  
**Period :** March, 2012 – March, 2013  
**Title of qualification :** Secondary School Standard  
**Final certificate mark :** 79.8%

#### TECHNICAL SKILLS AND COMPETENCIES:

##### Scientific skills and competences:

- Molecular Beam Epitaxy for thin films
- Co-precipitation method for synthesis of nanoparticles
- Ball milling method for synthesis of nanoparticles
- X-Ray diffraction
- HR-Transmission electron microscopy
- Scanning electron microscopy
- X-Ray photoelectron spectroscopy
- X-Ray absorption spectroscopy
- X-Ray magnetic circular dichroism
- X-Ray linear dichroism
- Magneto-optic Kerr effect
- Superconducting quantum Interference Device
- Vibrating Sample magnetometer study

##### Computer skills and competences:

- Microsoft Windows and MacOS X
- Microsoft Office package (Word, Excel, PowerPoint, etc.)
- Web surfing (Internet explorer, google chrome, safari) and e-mail (Outlook)
- Adept with SciLab, C++, Daz3D
- GSAS Software (Rietveld Refinement)

**Social skills and competences:**

- OriginLab for Data Analysis
- Ability to comfortably work in group
- Good communication skills and Adaptability
- Good ability to interact with technical and scientific staff members at various levels
- Eminent written and verbal Communications

**PROFESSIONAL SKILLS AND COMPETENCIES:**

**Mother Tongue : Hindi**

**Other Languages : English (European C2 Level)**

- **Read :** MASTERY
- **Written :** MASTERY
- **Spoken :** MASTERY

**Italian (European A2 Level)**

- **Read :** WAYSTAGE
- **Written :** WAYSTAGE
- **Spoken :** WAYSTAGE

**French (European B1 Level)**

- **Read :** MODERATE
- **Written :** MODERATE
- **Spoken :** MODERATE

**PUBLICATIONS:**

1. **Dagur, D.**, Finardi, A. M., Polewczyk, V., Petrov, A. Y., Dolabella, S., Motti, F., Dobovcnik, E., Giugni, A., Rossi, G., Panaccione, G., Fasolato, C., Torelli, P., & Vinai, G. **Thermal treatment effects on PMN-<sub>0.4</sub>PT/Fe multiferroic heterostructures.** *In preparation*
2. **Dagur, D.**, Polewczyk, V., Petrov, A. Y., Carrara, P., Brioschi, M., Fiori, S., Cucini, R., Rossi, G., Panaccione, G., Torelli, P., & Vinai, G. (2022). **Visible light effects on photostrictive/magnetostrictive PMN-PT/Ni heterostructure.** *Advanced Materials Interfaces*, 9(36). <https://doi.org/10.1002/admi.202201337>.
3. Nanao, Y., Bigi, C., Rajan, A., Vinai, G., **Dagur, D.**, King P.D.C. (2023). **Epitaxial growth of AgCrSe<sub>2</sub> thin films by molecular beam epitaxy.** *Accepted in Journal of Applied Physics*.
4. Bigi, C., Qiao, L., Liu, C., Barone, P., Hatnean, M. C., Siemann, G.-R., Achinuq, B., Mayoh, D. A., Vinai, G., Polewczyk, V., **Dagur, D.**, Mazzola, F., Bencok, P., Hesjedal, T., van der Laan, G., Ren, W., Balakrishnan, G., Picozzi, S., & King, P. D. C. (2023). **Covalency, correlations, and interlayer interactions governing the magnetic and electronic structure of Mn<sub>3</sub>Si<sub>2</sub>Te<sub>6</sub>.** *Physical Review. B*, 108(5). <https://doi.org/10.1103/physrevb.108.054419>.

5. Fiori, S., **Dagur, D.**, Capra, M., Picone, A., Brambilla, A., Torelli, P., Panaccione, G., & Vinai, G. (2023). **Electronically ordered ultrathin Cr<sub>2</sub>O<sub>3</sub> on Pt(1 1 1) in presence of a multidomain graphene intralayer.** *Applied Surface Science*, 613(155918), 155918. <https://doi.org/10.1016/j.apsusc.2022.155918>.
6. Polewczyk, V., Chaluvadi, S. K., **Dagur, D.**, Mazzola, F., Punathum Chalil, S., Petrov, A. Y., Fujii, J., Panaccione, G., Rossi, G., Orgiani, P., Vinai, G., & Torelli, P. (2023). **Chemical, structural and electronic properties of ultrathin V<sub>2</sub>O<sub>3</sub> films on Al<sub>2</sub>O<sub>3</sub> substrate: Implications in Mott-like transitions.** *Applied Surface Science*, 610(155462), 155462. <https://doi.org/10.1016/j.apsusc.2022.155462>.
7. Brioschi, M., Carrara, P., Polewczyk, V., **Dagur, D.**, Vinai, G., Parisse, P., Dal Zilio, S., Panaccione, G., Rossi, G., & Cucini, R. (2023). **Multidetector scheme for transient-grating-based spectroscopy.** *Optics Letters*, 48(1), 167. <https://doi.org/10.1364/ol.476958>.
8. Carrara, P., Brioschi, M., Longo, E., **Dagur, D.**, Polewczyk, V., Vinai, G., Mantovan, R., Fanciulli, M., Rossi, G., Panaccione, G., & Cucini, R. (2022). **All-optical generation and time-resolved polarimetry of magnetoacoustic resonances via transient grating spectroscopy.** *Physical Review Applied*, 18(4). <https://doi.org/10.1103/physrevapplied.18.044009>.
9. Ghosh, M. P., Kinra, S., **Dagur, D.**, Choubey, R. K., Mukherjee, S. (2020). **Evidence of large exchange bias effect in single-phase spinel ferrite nanoparticles.** *Physica Scripta*, 95 (9). <https://doi.org/10.1088/1402-4896/abaf90>.

#### PARTICIPATION IN CONFERENCES / SCIENCE MEETS / SCHOOLS:

##### CONFERENCES

- **Type of Conference :** International  
**Name of Conference :** Joint European Magnetic Symposia (JEMS)  
**Organized by :** European Magnetism Association and Complutense University of Madrid  
**Period :** 27 August - 01 September, 2023  
**Title of Poster :** "Ferroelectric thermal treatments: an additional lever in magnetoelectric heterostructures"  
**Place :** Madrid, Spain
- **Type of Conference :** International  
**Name of Conference :** CrossNano CrossBorder Workshop in Nanoscience and Nanotechnology  
**Organized by :** University of Trieste  
**Period :** 21 - 23 February, 2023  
**Title of Talk :** "Visible light effects on photostrictive/magnetostrictive PMN-PT/Ni heterostructure"  
**Place :** Trieste, Italy
- **Type of Conference :** International  
**Name of Conference :** Advances in Magnetism (AIM)



**Organized by :** IEEE Magnetics Society  
**Period :** 15 – 18 January, 2023  
**Title of Talk :** *“Visible light effects on photostrictive/magnetostrictive PMN-PT/Ni heterostructure”*  
**Place :** Moena, Italy

- **Type of Conference :** International  
**Name of Conference :** Joint European Magnetic Symposia (JEMS)  
**Organized by :** European Magnetism Association and University of Warsaw  
**Period :** 24 - 29 July, 2022  
**Title of Talk :** *“Light-induced magnetic modifications in PMN-PT/Ni multiferroic heterostructure”*  
**Place :** Warsaw, Poland

- **Type of Conference :** International  
**Name of Conference :** CrossNano CrossBorder Workshop in Nanoscience and Nanotechnology  
**Organized by :** University of Trieste, Jožef Stefan International Postgraduate School, Jožef Stefan Institute, and University of Ljubljana  
**Period :** 22 - 24 February, 2022  
**Title of Talk :** *“Light-induced magnetic modifications in multiferroic heterostructures”*  
**Place :** Virtual platform (MS Teams)

- **Type of Conference :** International  
**Name of Conference :** The 2021 Around-the-Clock Around-the-Globe Magnetics Conference  
**Organized by :** IEEE Magnetics Society  
**Period :** 24 - 25 August, 2021  
**Title of Talk :** *“Photostrictive/photovoltaic effects on magnetostrictive films in multiferroic heterostructures under UV light”*  
**Place :** Virtual platform (Zoom and Gather)

- **Type of Conference :** International  
**Name of Conference :** CrossNano CrossBorder Workshop in Nanoscience and Nanotechnology  
**Organized by :** University of Trieste, Jožef Stefan International Postgraduate School, Jožef Stefan Institute, and University of Ljubljana  
**Period :** 23 - 25 February, 2021  
**Title of Talk :** *“Photostrictive/photovoltaic effects on magnetostrictive films in multiferroic heterostructures under UV light”*  
**Place :** Virtual platform (MS Teams)

- **Type of Conference :** International / Amity University Noida  
**Period :** 2 - 3 February, 2019

**Title of Talk :** *"Efficient Solar Power Generation and Energy Harvesting"*

**Place :** Amity University Noida, UP, India

- **Type of Conference :** International / Student by JSCOP

**Period :** 4 - 9 November, 2018

**Title of Talk :** *"Optics and Photonic Devices"*

**Place :** Jaypee Institute of IT Noida, UP, India

- **Type of Conference :** National / Rajkiya Eng. College

**Period :** 6 - 7 September, 2019

**Title of Talk :** *"Computational and Characterization Techniques in Engineering & Sciences"*

**Place :** Rajkiya Eng. College Ambedkar Nagar, UP, India

## SCHOOLS

- **Type of School :** International

**Name of School :** 1<sup>st</sup> NFFA Europe Pilot Training School

**Organized by :** International Iberian Nanotechnology Laboratory (INL) and Foundation for Research and Technology (FORTH)

**Period :** 27 and 28 September, 2022

**Theme of the school :** *"Fine-analysis tools for nano-characterization"*

**Place :** Braga, Portugal

- **Type of School :** International

**Name of School :** European School on Magnetism (ESM)

**Organized by :** European Magnetism Association (EMA) and University of Saarland

**Period :** 11 – 23 September, 2022

**Theme of the school :** *"Basic Magnetism for Sustainable Development"*

**Place :** Saarbrücken, Germany

- **Type of School :** International

**Name of School :** 5<sup>TH</sup> International Doctoral Summer School

**Organized by :** Vytautas Magnus University

**Period :** 17 – 19 August, 2022

**Theme of the school :** *"Being strong in research methodology in a sustainable world"*

**Place :** Virtual platform (Zoom)

- **Type of School :** International

**Name of School :** Introductory course on Magnetic Random-Access Memory (InMRAM)

**Organized by :** Spintec (University of Grenoble Alpes/CNRS/CEA)

**Period :** 21 – 23 November, 2022

**Place :** Virtual platform (Zoom)

#### RESEARCH INTERESTS:

- Magnetic nanocomposites, thin films and Quantum dots
- Multiferroic/Magnetoelectric heterostructures
- Nano-scale ferroelectric/magnetic/optical/dielectric properties
- Magnetostrictive/Photostrictive Actuators and Sensors
- Laser driven memory devices
- Spintronic devices, etc.

#### NON-SCIENTIFIC INTERESTS & HOBBIES:

- Reading novels
- Solving Puzzles
- Public Speaking
- Travelling to new places, etc.

#### REFERENCES:

<ul style="list-style-type: none"><li>• <b>Dr. Piero Torelli, PhD</b> Researcher at IOM-CNR, Trieste</li></ul>	CNR-IOM, Elettra Synchrotron Trieste S.S. 14, km 163.5 34149 Basovizza, Trieste ITALY Tel: +39 040 3756457 (8075) E-mail: <a href="mailto:torelli@iom.cnr.it">torelli@iom.cnr.it</a>
<ul style="list-style-type: none"><li>• <b>Dr. Giovanni Vinai, PhD</b> Researcher at IOM-CNR, Trieste</li></ul>	CNR-IOM, Elettra Synchrotron Trieste S.S. 14, km 163.5 34149 Basovizza, Trieste ITALY Tel: +39 040 3756457 (8075) E-mail: <a href="mailto:vinai@iom.cnr.it">vinai@iom.cnr.it</a>
<ul style="list-style-type: none"><li>• <b>Dr. Samrat Mukherjee, PhD</b> Associate Professor of National Institute of Technology, Patna</li></ul>	Department of Physics, National Institute of Technology, Patna Address: Flat No. – 402, Type – IV, NITP, India Tel: +91 9771005232 E-mail: <a href="mailto:samrat.udc@gmail.com">samrat.udc@gmail.com</a>

