

Sohini Kar-Narayan, PhD

University Lecturer (Assistant Professor)
University of Cambridge

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Employment and Affiliations

- 2015 – **University Lecturer** (Assistant Professor)
Department of Materials Science & Metallurgy, University of Cambridge
- 2015 – **European Research Council (ERC) Starting Grant Holder**, University of Cambridge
- 2015 – **Bye-Fellow**, Homerton College, University of Cambridge.
- 2012 – **Director of Studies** (Physical Sciences), Homerton College, University of Cambridge.
- 2012 – **Official Fellow**, Clare Hall College, Cambridge University
- 2012 – 2015 **Royal Society Dorothy Hodgkin Fellow**
- 2008 – 2011 **Postdoctoral Research Associate**, Department of Materials Science, University of Cambridge.

Education and Research Experience

- 2008 – 2011 **Postdoctoral Research Associate**
Department of Materials Science and Metallurgy, University of Cambridge
- 2004 – 2008 **PhD in Physics**
Department of Physics, Indian Institute of Science, Bangalore, India
Spatially resolved studies of electronic phase separation and microstructure effects in hole-doped manganites (Supervisor: Prof. A. K. Raychaudhuri)
- 2001 – 2004 **MS in Physics**, CGPA: 6.8 (on a scale of 8)
Department of Physics, Indian Institute of Science, Bangalore, India
Experiments conducted on nano-manganites (Supervisor: Prof. A. K. Raychaudhuri)
- 1998 – 2001 **BSc with Honours in Physics**, First Class
Presidency College, University of Calcutta, Kolkata, India.

Prizes, Honours and Awards

- **Young Scientist Award 2015** (Selected by World Economic Forum as one of 40 extraordinary scientists under 40)
- **Departmental Teaching Prize 2016**, Department of Materials Science, University of Cambridge
- **Member of AcademiaNet** (Nominated by the Royal Society)
- **Liddiard Memorial Lecture** (Invited by the London Materials Society to deliver annual lecture, 2015)
- **ERC Starting Grant Holder** (2014, success rate of ~10% out of ~3500 applicants worldwide)
- **Bye-Fellowship**, Homerton College, Cambridge University
- **Contribution to Teaching prize**, Department of Materials Science & Metallurgy (2014)
- **Royal Society Dorothy Hodgkin Fellowship** (2012 – 2015. This award involved two rounds of review of the submitted research proposal. The success rate was 4%, > 100 applicants.)
- **Official Fellowship**, Clare Hall College, Cambridge (2012, based on nomination and panel interview)
- **Research Fellowship**, Clare Hall College, Cambridge (2009, annual competition with ~10% success rate)
- **Senior Research Fellowship**, Govt. of India (2006-2008, based on recommendation and panel interview)
- **Junior Research Fellowship**, Govt. of India (2004-2006, ranked in the top 10% of examinees nationwide)

Research Funding

- **S Kar-Narayan (PI)**
Marie Skłodowska-Curie Individual Fellowship “Stretchable Piezoelectric Nanogenerators for Energy Harvesting”
€ 183,455 (24 months from 1/8/2016)

- **S Kar-Narayan (PI)**
Isaac Newton Trust Research Grant “Flexible polymer-based thermoelectric generators for Energy Harvesting applications”
£ 22,348 (12 months from 1/9/2016)
- **S Kar-Narayan (PI)**
ERC Starting Grant 2015 “Polymer-based piezoelectric nanogenerators for energy harvesting”
€ 1,687,000 (60 months from 1/4/2015)
- **S Kar-Narayan (PI)**
EPSRC-funded Returning Carers’ Scheme “Ferroelectric materials for energy applications”
£ 15,285 (12 months from 21/1/2014)
- **S Kar-Narayan**
Royal Society Dorothy Hodgkin Fellowship “Electrocaloric effects in ferroelectrics”
£ 464,582 (FEC) (60 months form 1/1/2012)

Graduate and Undergraduate Teaching Experience

Teaching

- 2016- **Lecturer (Part IA)**
- Delivered 1st year undergraduate Materials Science course on “Microstructure”
 - Introduced new “active learning method” to lectures. Received outstanding student feedback
 - awarded “Departmental Teaching Prize” by the department in 2016
- 2014- **Lecturer (Part III/MPhil)**
- independently designed and introduced new course on “Energy Harvesting”, covering photovoltaic, thermoelectric and vibrational energy harvesting, microbatteries, supercapacitors and power management in energy harvesters (12 lectures), with positive student survey feedback
 - awarded “Contribution to Teaching” prize by the department in 2014
- 2012- **PhD Supervisor** (5 students)
- 2012- **Head of Class**, IA practicals

Selected Publications

Below is a list of selected recent publications: (*For a full publication list and citations, please see my Google Scholar page: <http://scholar.google.co.uk/citations?user=b3lfr0IAAAAJ&hl=en>*)

- A. Datta, Y. Sik Choi, E. Chalmers, C. Ou, S. Kar-Narayan, "Piezoelectric Nylon-11 Nanowire Arrays Grown by Template Wetting for Vibrational Energy Harvesting Applications", *Advanced Functional Materials* **27**, 1604262 (2017).
- M. Smith, Y. Calahorra, Q. Jing & S. Kar-Narayan, "Direct Observation of Shear Piezoelectricity in Poly-L-lactic Acid Nanowires", *APL Materials* **5**, 074105 (2017).
- A. Datta, P.E. Sanchez-Jimenez, R.A.R. Al Orabi, Y. Calahorra, C. Ou, S.L. Sahonta, M. Fornari & S. Kar-Narayan, “Lead-free polycrystalline ferroelectric nanowires with enhanced Curie temperature”, *Advanced Functional Materials* DOI: 10.1002/adfm.201701169 (2017).
- A. Datta, A. Sangle, N. Hardingham, C. Cooper, M. Kraan, D. Ritchie, V. Narayan & S. Kar-Narayan, "Structure and Thermoelectric Properties of Bi_{2-x}Sb_xTe₃ Nanowires Grown in Flexible Nanoporous Polycarbonate Templates" *Materials* **10**, 553 (2017).
- Y. Calahorra, R.A. Whiter, Q. Jing, V. Narayan, S. Kar-Narayan, "Localized electromechanical interactions in ferroelectric P(VDF-TrFE) nanowires investigated by scanning probe microscopy", *APL Materials* **4**, 116106 (2016).
- F. L. Boughey, T. Davies, A. Datta, R. A. Whiter, S.-L. Sahonta, S. Kar-Narayan, “Vertically aligned zinc oxide nanowires electrodeposited within porous polycarbonate templates for vibrational energy harvesting”, *Nanotechnology (Letters)* **27**, 28LT02 (2016).
- C. Ou, P. E. Sanchez-Jimenez, A. Datta, F. L. Boughey, R. A. Whiter, S.-L. Sahonta, S. Kar-Narayan, “Template-Assisted Hydrothermal Growth of Aligned Zinc Oxide Nanowires for Piezoelectric Energy Harvesting Applications”, *ACS Applied Materials & Interfaces* DOI: 10.1021/acsami.6b04041 (2016).
- S. Crossley & S. Kar-Narayan, “Energy harvesting performance of piezoelectric ceramic and polymer nanowires”, *Nanotechnology* **26**, 344001 (2015).
- R.A. Whiter, V. Narayan & S. Kar-Narayan, “A scalable nanogenerator based on piezoelectric polymer nanowires with high energy conversion efficiency”, *Advanced Energy Materials* DOI: 10.1002/aenm.201400519 (2014).