Curriculum Vitae: Amit Kumar

Current Position: Senior Lecturer in Condensed Matter Physics and Materials Science, School of Mathematics and Physics, Queen's University Belfast (QUB) (2013-Present)

External Fellowships : Fellow of Higher Education Academy (2015-Present)

University Education:

Institution and Location	Field of Study	Degree, Year
IIT Kharagpur, India	Materials Science & Engg.	Bachelor of Tech. 2005
IIT Kharagpur, India	Materials Science & Engg.	Master of Tech. 2005
Pennsylvania State University	Materials Science & Engg.	PhD. 2010

PhD Thesis title : 'Spin-charge-lattice coupling in multiferroics and strained ferroelectrics '

Awards and fellowships

Ava Sanyal award for academic excellence (undergraduate)	2004
Indranil Award, Geological and Metallurgical Institute of India	2004-05
Microscopy Today Innovation Award	2011
UNSW Vice Chancellor's Fellowship	2012

Previous Appointments:

2010-2013 Postdoctoral Researcher, Centre for Nanophase Materials Sciences, Oak Ridge National Laboratory

Research and Professional Experience:

Dr. Kumar was appointed to a lectureship in Queen's University Belfast (QUB) in 2013. He obtained his PhD at Pennsylvania State University, USA where he made important contributions in developing a fundamental understanding of the coupling between spin, charge and lattice related order parameters in ferroics using nonlinear optics and relevant domain dynamics using scanning probe microscopy. He joined Oak Ridge National Lab in the Center for Nanophase Materials Sciences as a postdoctoral researcher in 2010 where he developed advanced scanning probe techniques for imaging functional properties in materials/complex oxides. He is considered an expert on nanoscale imaging of ferroelectric phenomena and has written relevant editorial article for Nature (2014). He was also awarded the 2011 Microscopy Today Innovation award for invention of a novel scanning probe microscopy technique which allows visualization of vacancy dynamics and reactions on the nanoscale and currently holds a commercial patent with Asylum Research, a SPM making company for the invention of the technique. At QUB, he has built his own research group working in novel dimensions of ferroelectric research which explores the underpinning physics to utilise novel functionality arising out of domain and domain walls in ferroic materials (with special attention to conductive behaviour of walls).

Publications and Citation Metrics : >85 peer reviewed journal publications, with a significant number in high-impact, high-visibility journals spread across the entire career. Publications include Science (1), Nature (1), Nature Physics (1), Nature Chemistry (1), Nature Communications (4), Physical Review Letters (5), Nano Letters (4), ACS Nano (4), Advanced Materials (3), Nano Energy (1) and Advanced Functional Materials (3). Publications also include reviews and editorial articles. Citation Metrics (at 30/12/2019) : H-Index: 33 (Web of Knowledge), 35 (Google scholar); Total Citations: 3870 (Web of Knowledge), 4843 (Google Scholar).

Awarded Research Grants **:** PI on over £0.5M external funding via three external research grants (2014-19), Co-I (£0.7M) and PI on internal infrastructure fund amounting to £ 0.25M (2017-18). Details are listed below:

2014-2015 Royal Society Grant , RG130604 funded by Royal Society (PI)

Title : Probing local ionic transport in Li-ion battery cathodes

2016-2019 US-IRELAND Grant, USI082 funded by DELNI/SFI/NSF (PI)
Title : Far-From-Equilibrium processing of ferroelectric thin films on glass and polymer substrates
(Total value of the grant across three partners ~ £1M)
2016-2017 EPSRC FIRST Grant, EP/N018389 (PI)
Title : Investigating Pressure induced conductive states on the nanoscale : A novel approach to nano-circuitry
2017-2018 Central Reserve Infrastructure Fund (CRIF-QUB) (PI)
Title : 'Cypher' Multimode Atomic Force Microscope
2019-2020 EPSRC Grant, EP/S037179/1 (PI)
Title : Quantitative Hall Voltage mapping at conducting Ferroelectric domain walls: A novel approach to extracting conduction mechanisms on the nanoscale

Invited Talks and Seminars : 6 invited talks at major international conferences and 3 international departmental seminars
2012 Invited talk, AVS Meeting, Nashville, USA
2014 Invited talk, MRS Spring Meeting, San Francisco, USA
2015 Invited talk, Heraeus Seminar/Workshop, Bonn, Germany
2016 Invited talk, IC4N conference, Porto Heli, Greece
2017 Invited talk, Topo-2017, Leeds
2018 Invited talk, IFAAP-2018, Hiroshima, Japan
2019 Invited talk, ISIF-2019, Dublin
2019 Invited talk, SSPro-2019, Thiruvanantpuram, India
2019 Invited talk, Asylum Research Workshop, QUB
Invited seminars at University of Kentucky (2012), IIT Gandhinagar (2017), University of Ulster (2018), University College Dublin (2018)
- Also presented around 25 contributed talks in sessions at major international conferences.
-Served as session chair at two sessions in MRS symposium and presented 2 workshop tutorials on scanning probe microscopy.

Professional Research Activities :
Journal reviewer : Peer-reviewer for *Science, Nature Communications, Nano Letters, Nanoscale, Applied Physics Letters, Journal of Applied Physics, Journal of Electronic Materials, Optics Letters* and *Journal of Optical Society B*
External Reviewer / Panel Service: Served as reviewer of three Energy Frontier Research Council Grant Proposals (each proposal worth around 10 million USD).
Professional Membership : Materials Research Society (MRS), American Vacuum Society (AVS), Electrochemical Society (ECS) and member of Institute of Physics (IoP).
Organisation of Scientific Meetings :
2015 Organised SPM session within the Physical Sciences programme at the Microscience Microscopy Congress (mmc2015) in Manchester, UK
2019 Organised International Symposium on Integrated Functionalities ISIF-2019 (Dublin)
Teaching and Training:
Internal QUB Teaching: 1st year: tutorials;; 3rd year: Solid State Physics lectures (PHY3012) and Synoptic Physics (PHY4029); 4th year: Physics of Materials Characterization (PHY4009) and project supervision; MSc: Materials Characterization on-line teaching (PHY9035).
Graduate Students and Postdoctoral Scholars Supervised: primary supervisor for 4 current PhD students (2 submitted) and 2 co-supervised students as well as supervision of 2 PDRAs / Fellows.