Akhila Kadgathur Jayaram

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Education

University of Leeds, School of Chemical and Process Engineering, UK 2013–2017

BSc. Nanotechnology (Physical) (Industrial) (1st Class – Predicted)

Year 1 grade: 87.4%; Year 2 grade: 78% (highest overall mark in cohort for both years); Year 3 grade: Pass in Industrial Placement Year

Undergraduate Research Project Title: 'Nanoparticle Fluid Behaviour in a Microfluidic Sensor Cell' – Working as part of an interdisciplinary team on the development of a High Level Integrated Sensor for Nanotoxicology Screening (HISENTS) funded by the EU Horizon 2020 grant, my project will consist of nanoparticle synthesis and characterisation, design of mixing component of microfluidic cell and observation of nanoparticle fluid behaviour through simulations by COMSOL Multiphysics and experiments using a LABVIEW-controlled automated injection system.

St. Joseph's Boys' High School, Bangalore 2011-2013

Indian School Certificate (ISC) – Average 90.6% (Awarded 'Best All Rounder' in cohort)

Physics: 92%; Chemistry: 92%; Biology: 92%; Mathematics: 83%; English: 94%

Sri Kumaran Public School, Bangalore 2001-2011

Indian Certificate of Secondary Education (ICSE) – Average 95.86% (Top 1% in the country)

Science: 92%; Mathematics: 92%; English: 96%; other subjects – 94% and above

Additional Educational Experience

Massive Online Open Courses

Making Biologic Medicines for Patients: The Principles of Biopharmaceutical Manufacturing (MIT) – 90%
Medicinal Chemistry: The Molecular Basis of Drug Discovery (Davidson College) – 86%
Introduction to the Science of Cancer (Ohio State University) - 100%

Achievements

- **Appointed School Representative for Chemical and Process Engineering –** University of Leeds, 2016

Represent over 400 undergraduate students and lead a group of 28 course representatives, work with university faculty to bring about student-led change; Student Representative on the University Cross-Disciplinarity Strategy Group

- **University of Alberta Research Experience Award –** University of Alberta, 2016

Competitive research award, awarded C$5000 to conduct research on complex microfluidics for health and environmental applications

- **Faculty of Engineering Dean's List for Academic Excellence** – University of Leeds, 2014 and 2015

Awarded to the top 5% undergraduate students in the 1st and 2nd years of study, received honour in both years eligible

- **Nanotechnology Level 2 Prize** – University of Leeds, 2015

Awarded £100 for securing the highest overall mark in my cohort

- **BUCS Northern 1A League Winner** – British Universities and Colleges Sport, 2014

Member of University of Leeds Women's Cricket Club 1st team for 2013-14 and 2014-15

- **International Undergraduate Excellence Scholarship** – University of Leeds, 2013

Highly competitive, awarded £12000 recognising excellent high school examination results, prior research experience and continued excellent academic performance throughout degree

- **Times Scholar Award** – Times of India, 2012

Selected to be one of the 20 Times Scholars out of 45,000 applicants in the country recognising academic excellence, social responsibility and potential for community leadership; awarded Rs.500,000 scholarship for undergraduate studies

Publications

- **A. Kadgathur Jayaram** and P.A. Tsai, Effect of Heterogeneous Porosity in Microfluidic Filtration. To be submitted for publication in *Applied Physics Letters.* (1st author)
- C.J Shilpa, **A. Kadgathur Jayaram**, *et al.* 2014. $GdAlO_3$: Eu^{3+}: Bi^{3+} nanophosphor: Synthesis and Enhancement of red emission for WLEDs. *Spectrochimica Part A*. 133, 550-558. (2nd author)

Presentations and Events Attended

- Presented research at the University of Alberta Intern Poster Symposium in August 2016
- Attended multiple nanotechnology-based research seminars at the University of Leeds and the University of Alberta
- Attended Royal Academy of Engineering Research Day session in October 2016
- Participated in the Department of Science and Technology (Government of India) Internship Camp in 2011
- Participated in a one-week Science Camp at the National University of Science, Singapore in June 2010
- Participated in a five-day NASA Space Camp at U.S. Space & Rocket Center, Huntsville, Alabama in 2007

Research and Industrial Experience

University of Alberta, Edmonton June 2016 – September 2016

Research Assistant, Tsai Research Lab

• Conducted independent research on design and fabrication of two microfluidic devices, one which acted as a microfluidic filtration device with heterogeneous porosity and the other used to synthesise functionalised nanoparticles

• Gained knowledge of 3D printing, 3D CAD modelling, Fluid Dynamics, MATLAB, Optics and Porous Media Flow

• The results obtained on the study of flow fields and solute transport in the microfluidic filter with heterogeneous porosity during the placement led to the first authorship of a paper to be submitted to *Applied Physics Letters*

Global Manufacturing and Supply Division at GlaxoSmithKline plc, Ware June 2015 – June 2016

Materials Science Analyst (Industrial Placement), Materials Science Group

• Member of a highly interdisciplinary global Respiratory and Colloids team supporting the manufacture and development of colloidal dermatological and respiratory formulations for GSK sites around the world

• Solved technical issues and conducted scientific investigations by using characterisation techniques such as rheology, scanning electron microscopy, optical microscopy and differential scanning calorimetry; performed extensive literature review and produced scientific reports at end of testing

• Led five major projects related to manufacturing scale-up, technical transfer, supply chain de-risking, new product introduction and development of rheological characterisation methods for an excipient; volunteered as a STEM Ambassador at GSK Work Experience Week

Jawaharlal Nehru for Advanced Scientific Research, Bangalore July 2014 – August 2014

Summer Research Intern at Light Scattering Laboratory, Chemistry and Physics of Materials Unit

• Synthesised silver nanoparticles via seed-mediated growth and studied their subsequent application in Surface Enhanced Raman Spectroscopy (SERS)

• Contributed to the optimisation of the process of coupling silver clusters to the nanoparticles mentioned above by the usage of organic linkers in collaboration with PhD researchers and compiled results obtained into a report

Tumkur University, Tumkur April 2013

Summer Research Intern, Prof. C.N.R. Rao Centre for Advanced Materials

• Synthesised Alumina-based nanophosphors used for dosimetric applications via Solution Combustion Synthesis in collaboration with PhD researchers

• Performed Scanning Electron Microscopy on nanophosphor samples and developed an appreciation of X-Ray Diffraction, Photoluminescence and Thermoluminescence characterisation techniques

• Results obtained during internship resulted in the second authorship of a paper published in *Spectrochimica Part A: Molecular and Biomolecular Spectroscopy*

National Institute of Mental Health and Neurosciences, Bangalore April 2012 – May 2012

Observer, Department of Neurovirology

• Gained an insight into diagnostic methods for viral diseases: ELISA, Western Blot, RT-PCR and immunofluoroscence for diseases like AIDS, Influenza A H1N1, Japanese Encephalitis, Herpes Simplex type 1, Measles and Rabies; shadowed various PhD students and laboratory personnel performing these techniques

• Carried out a project titled 'A Case study of Influenza A H1N1 cases at the Department of Neurovirology' to determine patterns between disease incidence and age, gender, area of residence etc.

Volunteering Experience

Content Developer and Blogger (Global Team), Indian Dreams Foundation, Agra, India October 2016 – Present

Work with a grassroots-level NGO in Agra, India helping them to enhance their web presence and provide communication support for their campaigns

Events and Logistics Officer, British Science Association, Leeds Branch June 2016 - Present

Actively work with a team of 6 to organise science-based events to increase public engagement with science and ensure diverse groups are reached

Curriculum Developer, Red Elephant Foundation, Chennai April 2016 - Present

Responsible for designing curriculum for courses that promote peace-building and awareness of gender-based violence

Vice President International Exchange Programmes, AIESEC Leeds August 2014 – July 2015

Led a team of 20 volunteers whose objective was to market volunteering projects and internships that promoted intercultural understanding; screened applications of potential candidates and arranged assessment centres; was instrumental in enabling the Outgoing Exchange team to generate £8000 revenue for the 2014-15 term

Professional Memberships

Affiliate Member of the **Royal Society of Chemistry**, Student member of the **Royal Microscopical Society** and **European Microscopy Society**

References

Academic Reference: Prof. Rik Brydson, Professor of Nanomaterials Characterisation, School of Chemical and Process Engineering, University of Leeds, UK; Email: R.M.Drummond-Brydson@leeds.ac.uk.

Research Placement Reference: Dr. Peichun Amy Tsai, Assistant Professor and Canada Research Chair in Fluids and Interfaces (Tier 2), Department of Mechanical Engineering, University of Alberta, Canada; Email: peichun@ualberta.ca