

Dhruv Saxena

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EDUCATION

- 2011-2017 **PhD (Physics)**
Australian National University, Canberra, Australia
Thesis: 'Design and characterisation of III-V semiconductor nanowire lasers'
- 2004-2007 **Bachelor of Science (Honours) - Applied Mathematics & Physics**
University of Sydney, Sydney, Australia
First Class Honours in Applied Mathematics

EXPERIENCE

- 2021-now **Postdoctoral Research Associate** | Imperial College London
EPSRC grant – Semiconductor lasers on a graph
- Experimental lead on investigating network lasers and arrays of coupled lasers for reservoir computing. Collaborating with IBM Zurich and University of Ghent for fabrication of lasers. Supporting and mentoring two PhD research students.
- 2018-2020 **Postdoctoral Research Fellow** | Imperial College London
Marie Skłodowska-Curie Individual Fellowship – Electrically pumped network random lasers
- Fabricated InP networks by lithography and characterised lasing by optical pumping. Contributed to developing a home-built code netSALT, which solves nonlinear laser equations on a graph. Modelled network lasers with netSALT and demonstrated [spectral control](#) of lasing in network lasers by optimised optical pumping.
- 2017-2018 **Postdoctoral Research Associate** | King's / Imperial College London
EPSRC grant – Hyperuniform disordered photonic materials
- Built hyperspectral imaging optical setup and characterised random lasing in polymer fibre [nanophotonic networks](#).
- 2011-2017 **PhD research** | Australian National University, Canberra, Australia
- Developed [III-V nanowire lasers](#) based on bulk and quantum confined gain materials through design optimisation and characterisation. Modelled nanowire lasers using Lumerical and laser rate-equations. Characterised spectral and far-field behaviour of nanowire lasers in a micro-PL optical setup.
- 2009-2011 **Senior Research Officer,**
2008-2009 **Research Officer** | Australian Bureau of Statistics, Canberra, Australia
- Quality ensured statistical outputs and assisted in survey redesign.

AWARDS & ACHEIVEMENTS

- 2018 European Commission Marie Skłodowska-Curie Individual Fellowship
- 2017 Jagadishwar Mahanty Prize for the best PhD thesis submitted by a Research School of Physics and Engineering student between July 2016 and June 2017
- 2016 Australian Optical Society (AOS) Postgraduate Student Prize

SKILLS

- Software: Competent in Matlab, Python, MS Office, Adobe Illustrator, Ansys Lumerical
- Fabrication: Basic knowledge and experience with GDS design, e-beam lithography, direct laser writing, dry etching and wafer bonding
- Optical lab: Proficient in building and using micro-photoluminescence optical setup, beam shaping with digital micro-mirror device (DMD), and hyperspectral and Fourier plane imaging. Experienced user of class 4 lasers.
- Languages: Fluent in English & Hindi

VOLUNTEERING AND INTERESTS

- 2020-2022 EXSS group representative in Imperial Physics RA committee
- 2018-2022 Laser safety trainer for Experimental Solid State Physics (EXSS) group
- 2019-2021 Lab Manager for Complex Nanophotonics optics lab
- 2018 Exhibit at Imperial Science Festival on *Structural Colour*

PUBLICATIONS (a selection only)

- 2022 Trivedi M, **Saxena D**, Ng W K, Sapienza R, Volpe G
Self-organized lasers from reconfigurable colloidal assemblies
Nature Physics **18**, 939-944 (2022)
- 2019 Gaio M, **Saxena D**, Bertolotti J, Pisignano D, Camposeo A, Sapienza R
A nanophotonic laser on a graph
Nature Communications **10**, 1 226 (2019)
- 2016 **Saxena D**, Jiang N, Yuan X, Mokkapati S, Guo Y, Tan H, Jagadish C
Design and room-temperature operation of GaAs/AlGaAs multiple quantum well nanowire lasers
Nano Letters **16**, 8 5080-5086 (2016)
- 2013 **Saxena D**, Mokkapati S, Parkinson P, Jiang N, Gao Q, Tan H, Jagadish C
Optically pumped room-temperature GaAs nanowire lasers
Nature Photonics **7**, 12 963-968 (2013)

- REFEREES** References available on request