Kezia Sasitharan MSc, PhD Chemistry
Leverhulme Trust Early Career Fellow

Postdoctoral Research Experience

April 2022 – December 2024: **Research Associate – Energy, Freitag Group**
Newcastle University, UK
Research area - Coordination polymer solid state charge transport for dye solar cells

KEY ACHIEVEMENTS

- Visiting researcher at UMass Boston working on CO_2 reduction (June 2023)
- Royal Society of Chemistry travel grant (July 2023)
- STEM for Britain chemistry finalist 2023 at UK houses of Parliament (Feb 2023)
- Northern Accelerator Innovators programme (June 2023)

Feb 2021 – March 2022 **Postdoctoral Research fellowship**
Centre for Advanced Photovoltaics
CVUT, Prague, Czech Republic
Research area – MXene nanosheet based charge transport layers for perovskite solar cells

Education and Research Experience

Oct 2017- Jan 2021: ***PhD, University of Sheffield, UK*** ***PI: Dr Jonathan Foster***

- Pioneered the use of 2D Metal-organic nanosheets (MONs) in the active layer of organic bulk heterojunction solar cells for improvement in efficiency in collaboration with Dr Ahmed Iraqi and Prof David Lidzey
- Developed the highest performing fullerene based organic solar cell reported to date.

Jun 2015-2017: Distinction, ***MSc Chemistry, Christ University, India***

- Interned for 8 weeks with the Ministry of Renewable Energy, Govt of India

2012-2015: Distinction, ***BSc Chemistry, WCC, University of Madras, India***

- Student President 2014-15

Awards and scholarships

2024 **Leverhulme Early Career Fellowship** – 3 years of funding as Principal Investigator for exploring Metal-Organic Nanosheets for energy storable solar cells.

2024 **C-DICE Research proposal development grant** – travel grant to set up a collaboration with Universidad Pablo de Olavide, Seville, Spain.

2023 **Electrochemical Society** (ECS) nanocarbons division biennial travel grant to attend the ECS Spring meeting Boston, Massachusetts

2022 Newcastle University **spotlight award** for contribution and leadership in the Royal Society Summer Science Exhibition

2021	**Dr Tasilo Prnka Prize** (Honourable mention) awarded to young scientists under 33 years of age, at NANOCON-21, Brno, Czech Republic.
2020	Sheffield **PREP** Postgraduate Researcher Experience Programme Bursary award (£1000)
2019	**GEIC Prize** - £6000 worth of scientific support from Graphene Engineering and Innovation Centre to develop the Graphene Hackathon prototype into an enterprise
2019	**DAAD Rise** Professional scholarship (£3600) awarded by the German Academic Exchange Service to spend 3 months at Helmholtz Zentrum Berlin
2017	**University of Sheffield** Faculty of Science Doctoral Academy Scholarship (£36,500 per year – international tuition fee+ maintenance stipend) for PhD
2016	**Indian academy of Science** summer research fellowship, a national level fellowship offered to postgraduate students to work in a national science laboratory for 8 weeks.
2015	**UGC** Post-graduate fellowship, a national level scholarship to fund MSc study
2015	**Gopalacharulu Gold medal** for best outgoing student in the Department of Chemistry, Women's Christian College, Chennai
2015	**Anna Mathew Medal** for exemplary service to the college community, Women's Christian College, Chennai.
2015	**Vatsala Pai Prize** for leadership, scholarship and co-curricular achievements, Women's Christian College, Chennai
2014	**The Scranton's Scholarship** for Young Emerging Women Leaders in Asia, offered by the American Methodist association

Invited talks

Mar 2024	Invited speaker at MATSUS 24, to speak on "Circular Economy of Energy Materials", Barcelona Spain
Mar 2022	Invited speaker at a 2-day webinar on "Nanotechnology and Materials Science", St Xavier's College, Goa, India
Sep 2021	Inaugural address to the RSC Student chapter- Chemistry Club, Women's Christian College, Chennai, India. Title – 'Venturing into the world of nanomaterials'.
Mar 2021	Title- 'Metal-Organic Framework Nanosheets in solar cells', for the inauguration of 'Progress and Promises in Chemical Sciences 2021', Christ University, Bangalore, India
Feb 2021	Invited as a member for panel discussion at The University of Sheffield, UK titled – 'Networking for PhD students.'

(+2 talks)

Selected presentations

May 2024	'Metal-organic nanosheets for synchronous energy harvest and storage', HOPV – Hybrid and Organic Photovoltaics, Valencia, Spain.
July 2023	'1D Coordination nanowires for charge transport', MC16 – 16th International conference on Materials Chemistry, Dublin, Ireland.
June 2023	'Coordination polymers for solid state dye-sensitized solar cells', 243rd Electrochemical Society (ECS) Meeting, Boston, Massachusetts, USA
Nov 2022	'Nanostructured ccordination polymers for high performance solar cells', RSC Energy Sector Early career Symposium, Burlington House, London, UK, **Poster presentation, first prize**)

Oct 2021	'Microstructure and optoelectronic effects of MXenes spincoated from polar aprotic solvents on ITO', 13th International Conference on Nanomaterials – Research and Application, Brno, Czech Republic (**Talk -Prize winner**)
Feb 2020	'Two-dimensional framework nanosheets for Organic Photovoltaics' IUPAC Global Women's breakfast – Sheffield Women in Science, **Best talk prize**, Sheffield, UK
Jan 2020	'Enhanced performance of bulk heterojunction solar cells by metal-organic nanosheets' RSC Next Generation Materials for Solar Photovoltaics, Burlington House, London, UK
Sep 2019	Metal-organic nanosheets: A new dimension in solar cell research **Best Oral presentation prize** 5th International Fall School on Organic Electronics- 2019, Moscow, Russia (+5 talks and 10 poster presentations)

Selected publications

Sasitharan, K., Frisch, J., Kuliček, J. *et al.* Tuning the morphology and energy levels in organic solar cells with metal–organic framework nanosheets. *Sci Rep* **14**, 29559 (2024). https://doi.org/10.1038/s41598-024-80007-y

Metal-Organic Framework Nanosheets as Templates to Enhance Performance in Semi-Crystalline Organic Photovoltaic Cells. **Kezia Sasitharan**, Rachel C. Kilbride, Emma L.K. Spooner, Jenny Clark, Ahmed Iraqi, David G. Lidzey, Jonathan A. Foster, ***Adv. Sci.*** **2022**, 9, 2200366. https://doi.org/10.1002/advs.202200366

Metal-Organic Framework Nanosheets: Programmable 2D Materials for Catalysis, Sensing, Electronics, and Separation Applications. Josh Nicks, **Kezia Sasitharan**, Ram Prasad R. R. David J. Ashworth, Jonathan A. Foster, ***Adv. Funct. Mater.*** **2021**, 2103723. doi.org/10.1002/adfm.202103723

'Metal–organic framework nanosheets for enhanced performance of organic photovoltaic cells', **Kezia Sasitharan**, David G. Bossanyi, Naoum Vaenas, Andrew J. Parnell, Jenny Clark, Ahmed Iraqi, David G. Lidzey and Jonathan A. Foster, March 2020, ***J. Mater. Chem. A*****, 2020**,**8**, 6067-6075 A DOI: 10.1039/C9TA12313J

'Flavonol based surface modification of doped chalcogenide nanoflakes as an ultrasensitive fluorescence probe for Al^{3+} ion', **Kezia Sasitharan**, Anitha Varghese, Louis George, September 2017, **Analytica Chimica Acta** 992, DOI: 10.1016/j.aca.2017.08.045

'Dye-sensitized Solar Cells', **Kezia Sasitharan**, Arcler Press Ltd, ISBN: 9781773610924 (**Graduate Level Textbook**)

'Biomass-derived carbonaceous materials: Synthesis and photocatalytic applications' **Sasitharan, K**., Varghese, A. Novel Applications of Carbon Based Nano-materials, 2022, pp. 412–429 (**Book Chapter**)

Electrical properties of MXene thin films prepared from non-aqueous polar aprotic solvents Journal of Materials Research Pub Date: 2023-05-31 , DOI:10.1557/s43578-023-01033-6 Oksana Gutsul, Ondrej Szabo, Nirmal Kumar, Rene Pfeifer, Branislav Dzurnak, **Kezia Sasitharan**, Vsevolod Slobodyan, Alexander Kromka, Bohuslav Rezek

Outreach and teaching

1. Part of the Berry Solar Cells team at the Royal Society Summer Science Festival July 6-10, 2022, London

2. Generated projects for and supervised one MChem and one MSci student in demonstrating laboratory techniques, introducing literature, data collection, analysis and report writing.

3. Lab Teaching -3rd year Physics – Microscopy and spectroscopy labs at University of Sheffield; and Gamma Spectroscopy experiment for Materials Engineering students on a semester abroad program from Nanjing University, China

4. Lead an Outreach activity in Chem school's lab, University of Sheffield on 'Make your own solar cell out of fruit juice' – Taught year 8 students.

5. Scientific advisor for a team of 5 undergraduate engineers on project Sunbyte testing organic solar cell prototype on a high-altitude balloon flight

Leadership and Committees

- Newcastle University Research Associates committee member
- Newcastle University Research Culture Community Action Team