MSCA Individual Fellowship:
A personal perspective

Dr. Jason Stafford, University of Birmingham

European Commission, UKRO and UUKi Joint Event on the Marie Skłodowska Curie Actions

University College London, 26th June 2024

Research career

Research scientist in Industry (*Bell Labs*, 2012 – 2017)

MSCA Individual Fellowship (*Imperial College London*, 2017 – 2019)

Academic (*University of Birmingham*, 2019 – present)

Industry	Academia
Alcatel·Lucent Bell Labs NOKIA Bell Labs	University of Limerick Ollscoil Luimnigh Imperial College London University of Birmingham
5 years (post PhD)	7 years (post PhD)

Alcatel·Lucent
Bell Labs

NOKIA Bell Labs

Telecommunications research

1925-present

10 Nobel Prizes

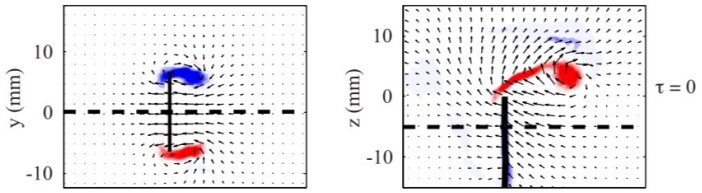
Most recent in 2023 (Quantum dots, Luis Brus)

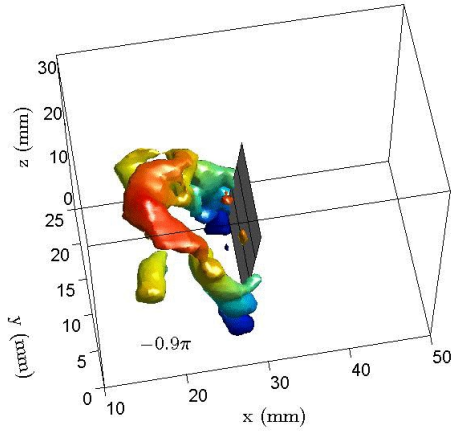
Arguably the most famous invention?

Transistor by Bardeen, Brattain and Shockley in 1947

New approaches for cooling electronics and photonics ICs

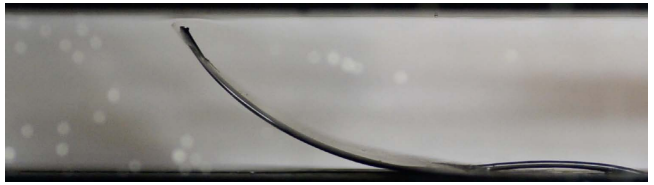
Flapping wings

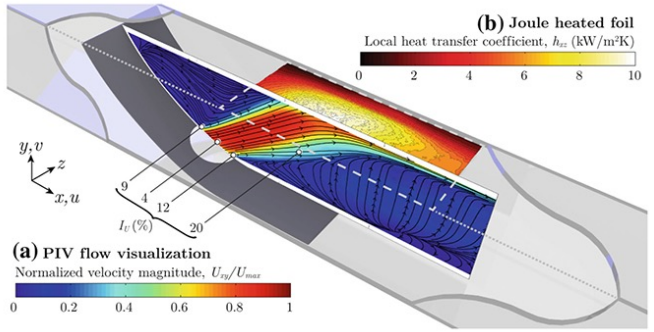




Rotating flows

Passively controlled microfluidics





Alcatel·Lucent
Bell Labs

NOKIA Bell Labs

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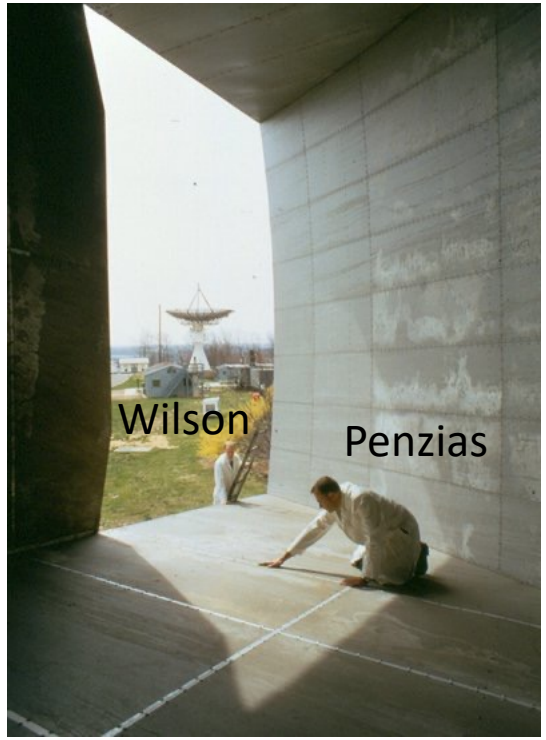
A favourite: Penzias and Wilson, Nobel Prize in Physics 1978

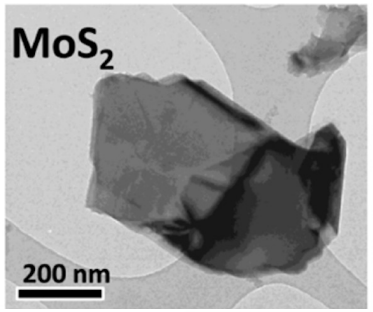


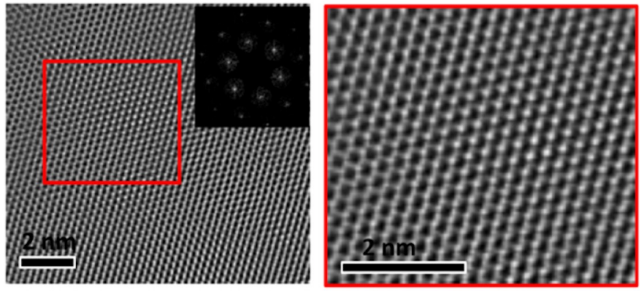
Why make a career move?

Why choose MSCA fellowship?

Emerging field: Atomically thin materials

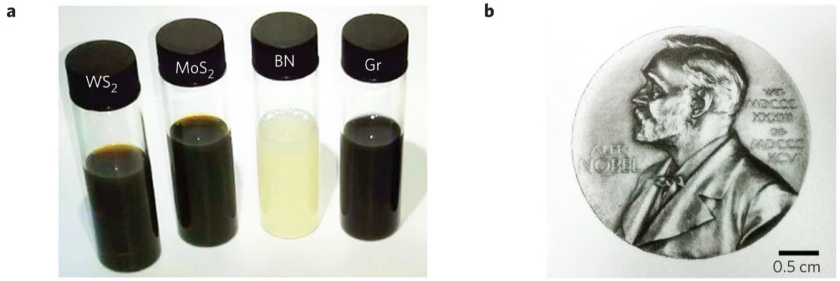
Example





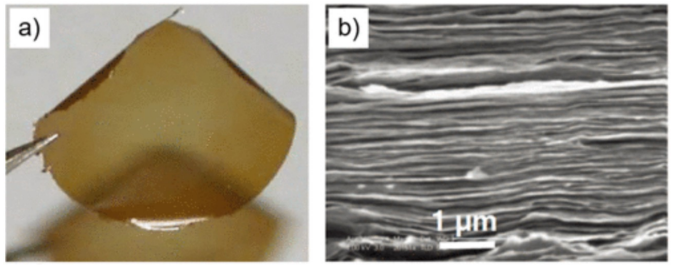
Yang et al. (2014) *2D Materials*,
doi: 10.1088/2053-1583/1/1/011012

Transistors, memory, photodectors,…



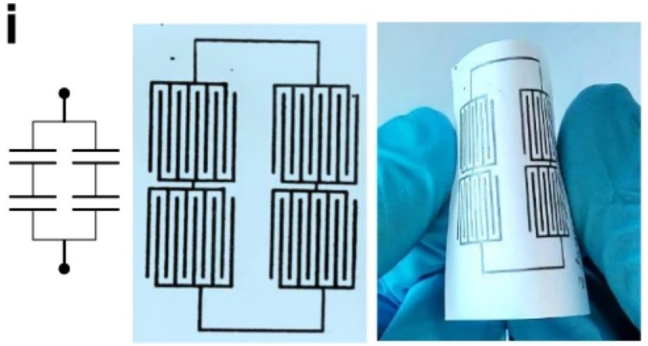
McManus et al. (2017) *Nat. Nano.*,
doi: 10.1038/nnano.2016.281

Environmental remediation



Nair et al. (2012) *Science*,
doi: 10.1126/science.1211694

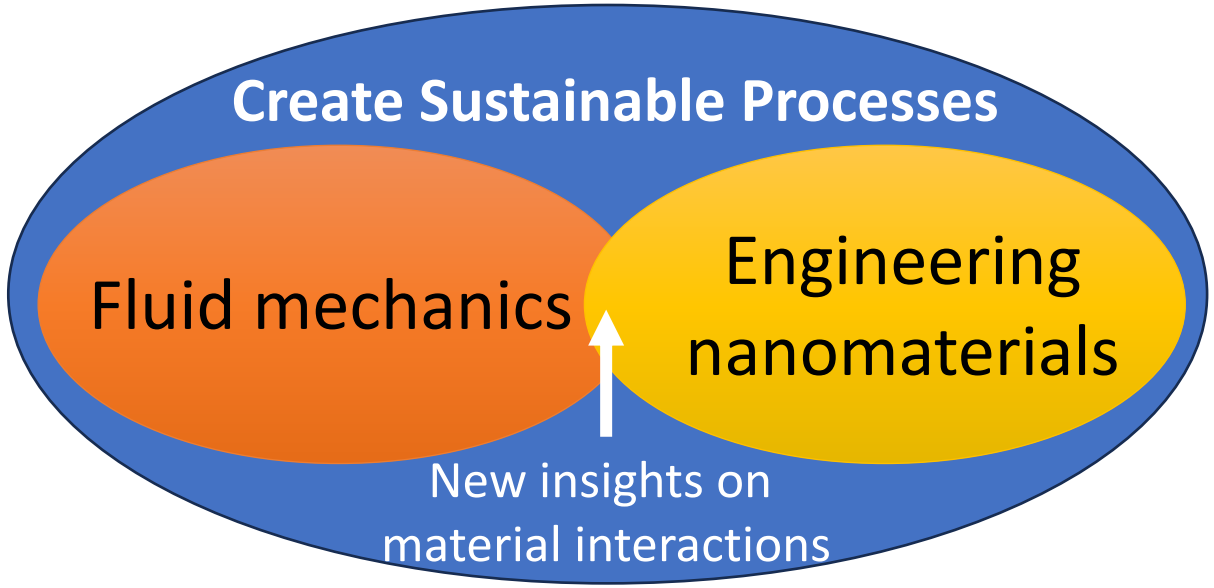
Energy storage

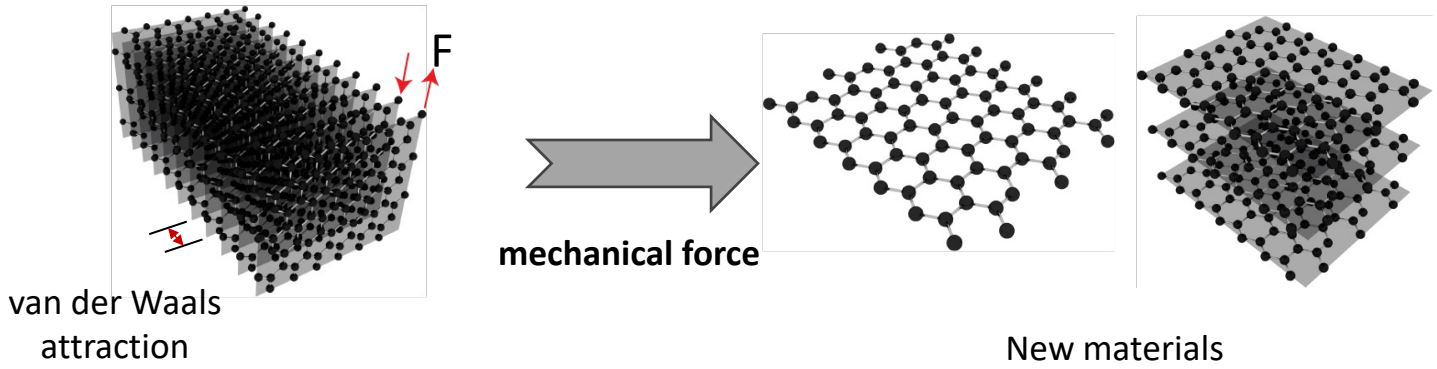


Zhang et al. (2019) *Nat. Comm.*,
doi: 10.1038/s41467-019-09398-1

Large-scale, high quality and **sustainable production** a major challenge

The idea I wanted to work on





Stafford et al. (2018) *AIChE journal*, doi: 10.1002/aic.16174
Stafford et al. (2021) *2D Materials*, doi: 10.1088/2053-1583/abdf2f

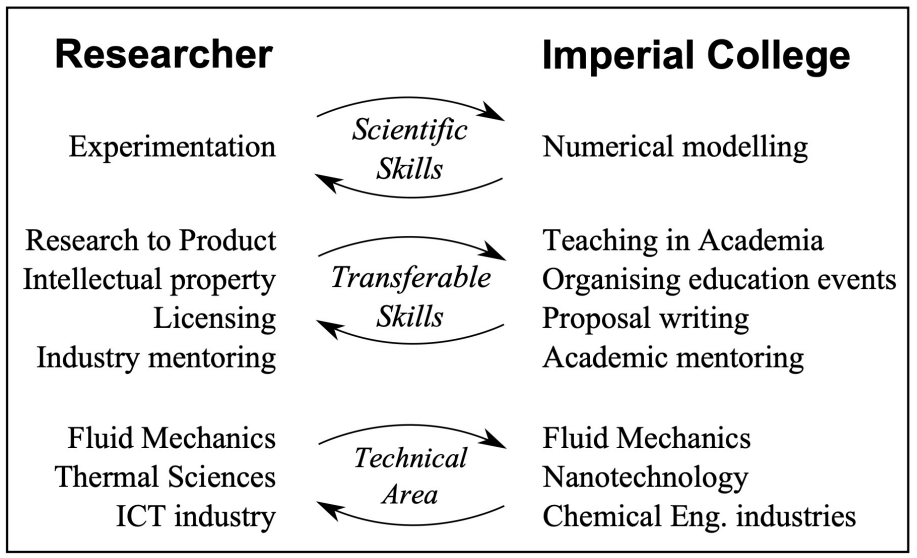
What I wanted to do ≠ What I could do

✅ Work within & across new Research fields	✅ Intersectoral mobility	✅ International mobility
Thermofluid mechanics → Materials & Chemical Engineering	Industry → Academia	Ireland → United Kingdom

✅ Family circumstances
Married + 3-month-old child

The answer: Apply for a MSCA Individual Fellowship

Shared development plan



Impact on Research & Career

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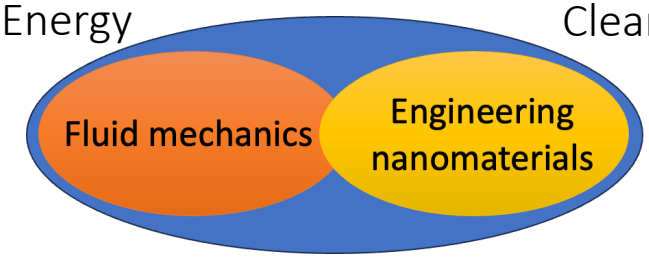
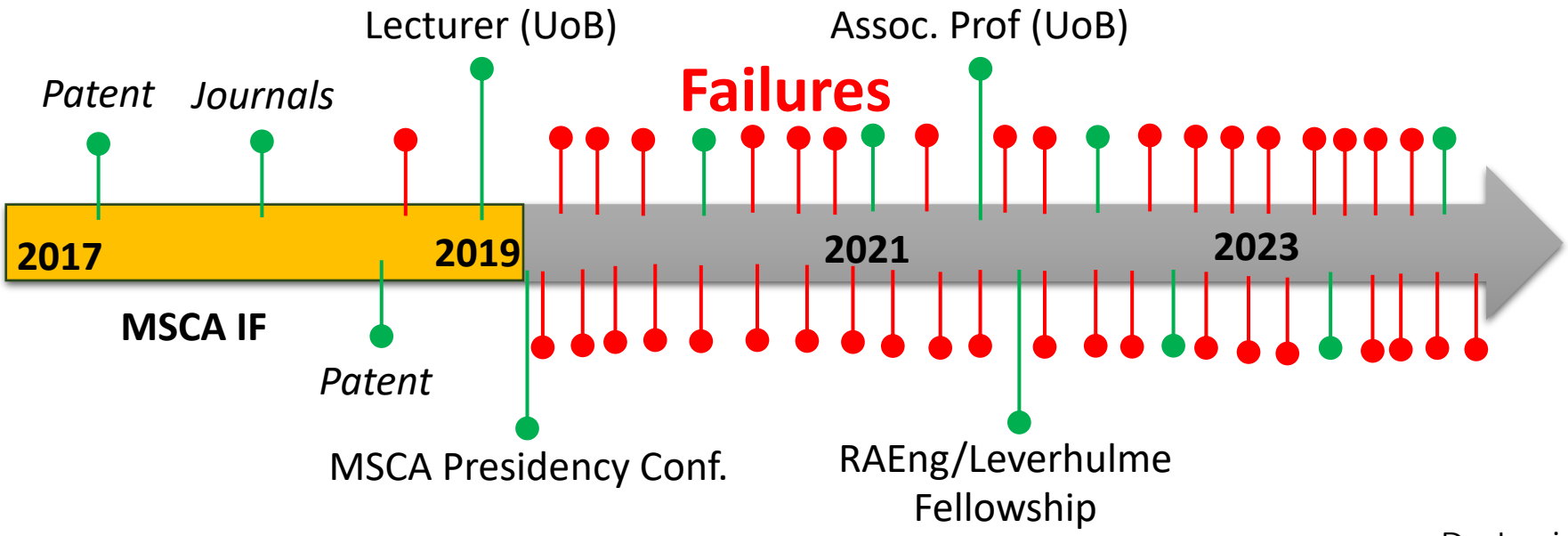
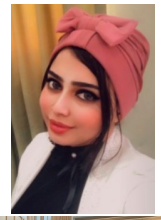
Global Challenges

Sustainable Manufacturing Clean Water

Thermal Energy Clean Air







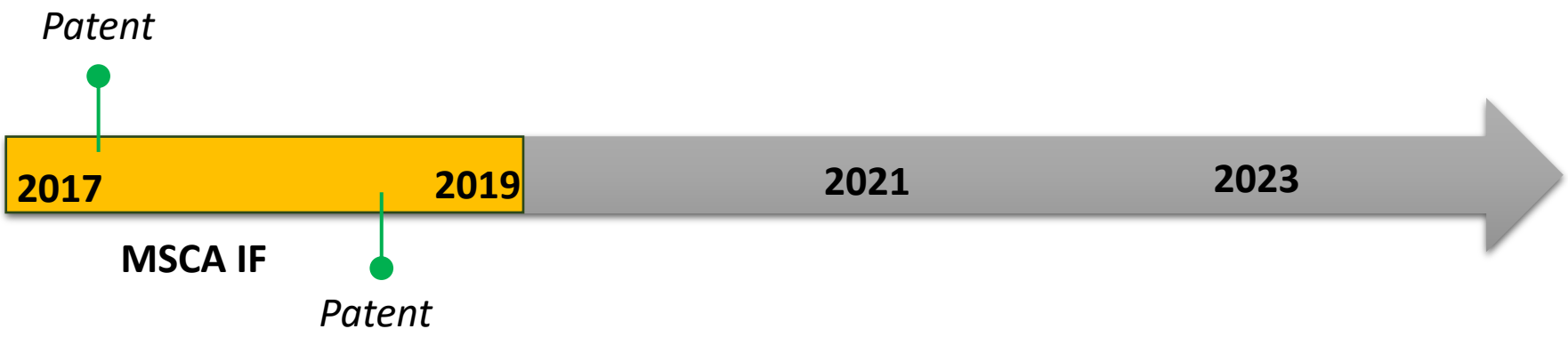
Dr. Irwing Ramirez; Dr. Lizan Khorsheed
Faysal Khaleel; Fahad Al-Gburi; Jacob Brown
Diego Perez-Alvarez; Run Si; Aadam Rabani

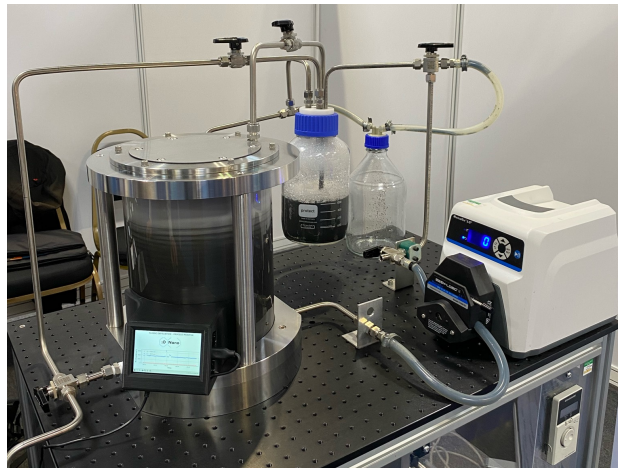
EPSRC, RAEng, Leverhulme, Royal Society,
EU Horizon (Mission Proj.), Rosetrees Trust: **approx. £2M**

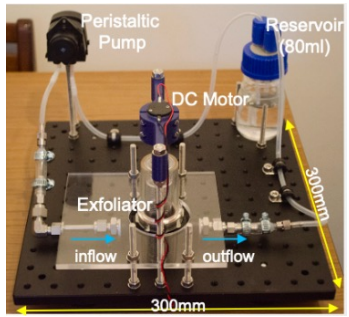
Impact of MSCA IF continues…

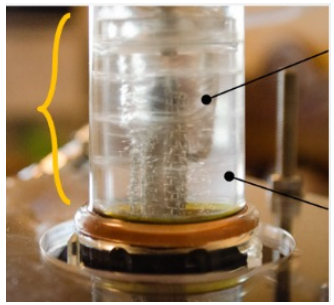
Commercialisation of research

Stafford, J., Petit, C., Matar, O., WO2021019228
Stafford, J., Petit, C., Matar, O., WO2019025784A1









Founders
Andrius Patapus (CEO)
Omar Matar (Imperial)
Camille Petit (Imperial)
Jason Stafford (Univ. of Birmingham)

Summary of benefits and other thoughts

- **Time** to think, build **independence**, and technical **speciality**
- **Career Development** – What are you missing and what skills do you need?
- **Shared Development** – What will you bring to the host or sector?
- Speak to your potential **host** to understand their **interests** and **mentorship qualities**
- **Long-term career** – Use it to explore if this is the sector where you would like to work
- **Writing** the proposal helps to reflect on your career, formulate ideas, and plan