University of Glasgow

Transforming the study of advanced materials through commercial development of a novel imaging detector

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Kelvin Nanocharacterisation Centre

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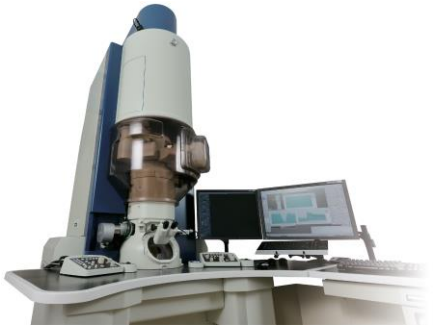
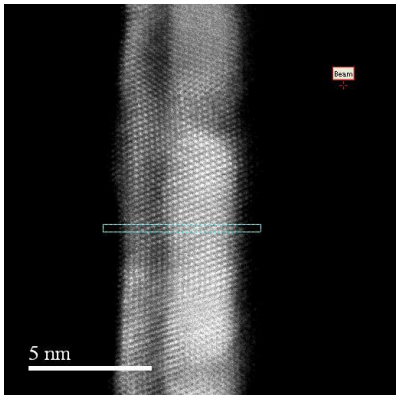
SUPA | Physics Scotland

Identifying a new market opportunity for CERN technology

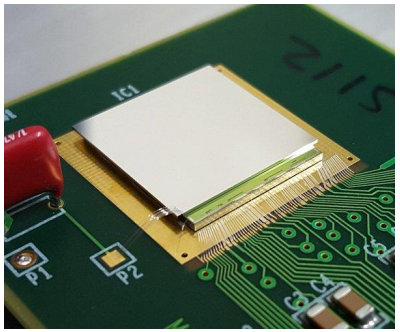
- Commercialisation driven from academia
- Collaborating with Quantum DETECTORS



- My research:
  - Investigating future technological materials
  - Using Transmission Electron Microscopes (TEMs)
  - Exploitation of new Hybrid Pixel Detectors from CERN for novel imaging



- EPSRC research grant funded development of a lab prototype detector



- Transformative capabilities -> disruptive potential

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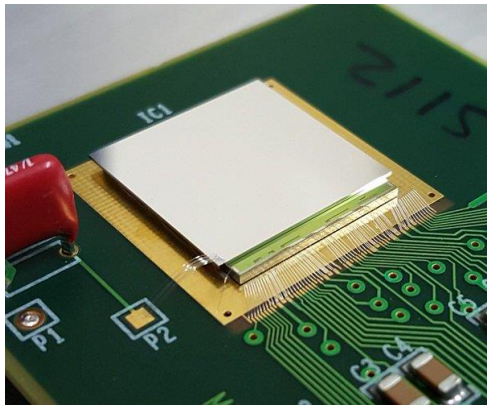
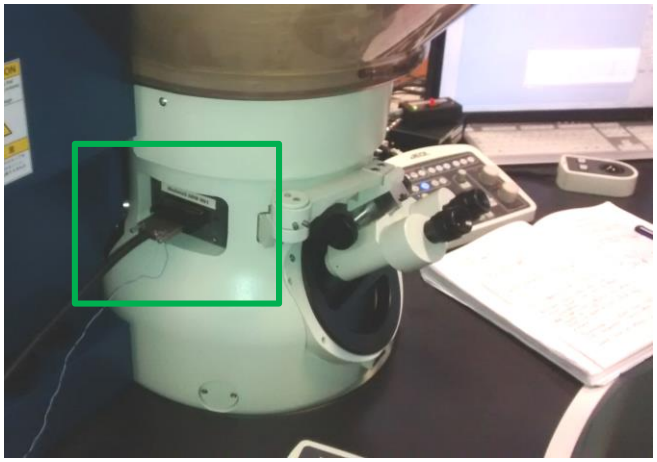
Current development

Medipix3
Co-developed by **Particle Physics Group** @ Glasgow
V. O'Shea, D. Maneuski





Quantum DETECTORS

Materials & Condensed Matter Physics Group, D. McGrouther, M. Perreur-Lloyd*
Medipix3 - transformative electron microscopy detector

Hi-speed readout system for CERN Medipix3
QD selling into X-ray synchrotron marketplace
New entry into high value Electron Microscopy market with GU designed product

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Market opportunity and KT

- TEM instruments cost £1-4M
- >10,000 worldwide in academia and high-tech industries (e.g. semiconductor, data storage, life sciences)
- Market dominated by 3 large manufacturers
- Add-on detectors cost 5-10% of instrument price

ThermoFisher SCIENTIFIC

HITACHI Inspire the Next

JEOL

De-risking commercial development

- Quantum DETECTORS a small company, initially 4 staff

- UoG support – EPSRC Impact Acceleration Funding
- 3 rounds totalling **£101k**
  - Development of a technology demonstrator
  - Development of first commercial design and prototypes
  - Adaptable to widest range of TEMs across all manufacturers
  - Development timescale: 18 months!!

- Technology access and impact for Quantum DETECTORS
  - Royalty based licensing of designs and knowhow IP from UoG
  - Access to leading academic knowledge and expertise
  - Rapid worldwide sales uptake – 10 detectors to date (**revenue >£1M**)
  - Predicting >5 units per annum
  - Growth in staff to 9 people
  - Now participating in OEM approval processes
  - Emerging opportunities with other small ad-on manufacturers

Advantages and challenges of academia/industry collaboration

- Advantages:
  - Access to leading multi-disciplinary expertise
  - Agility in development through access to specialist facilities
  - De-risking through financial support for “Impact”
  - Academic publications

- Challenges:
  - Organisational hurdles within the academic institution
  - Costs of direct industrial support
  - Expectations from industry collaborator
  - Pressured timelines / teaching & research
  - Defined Knowledge Transfer stage