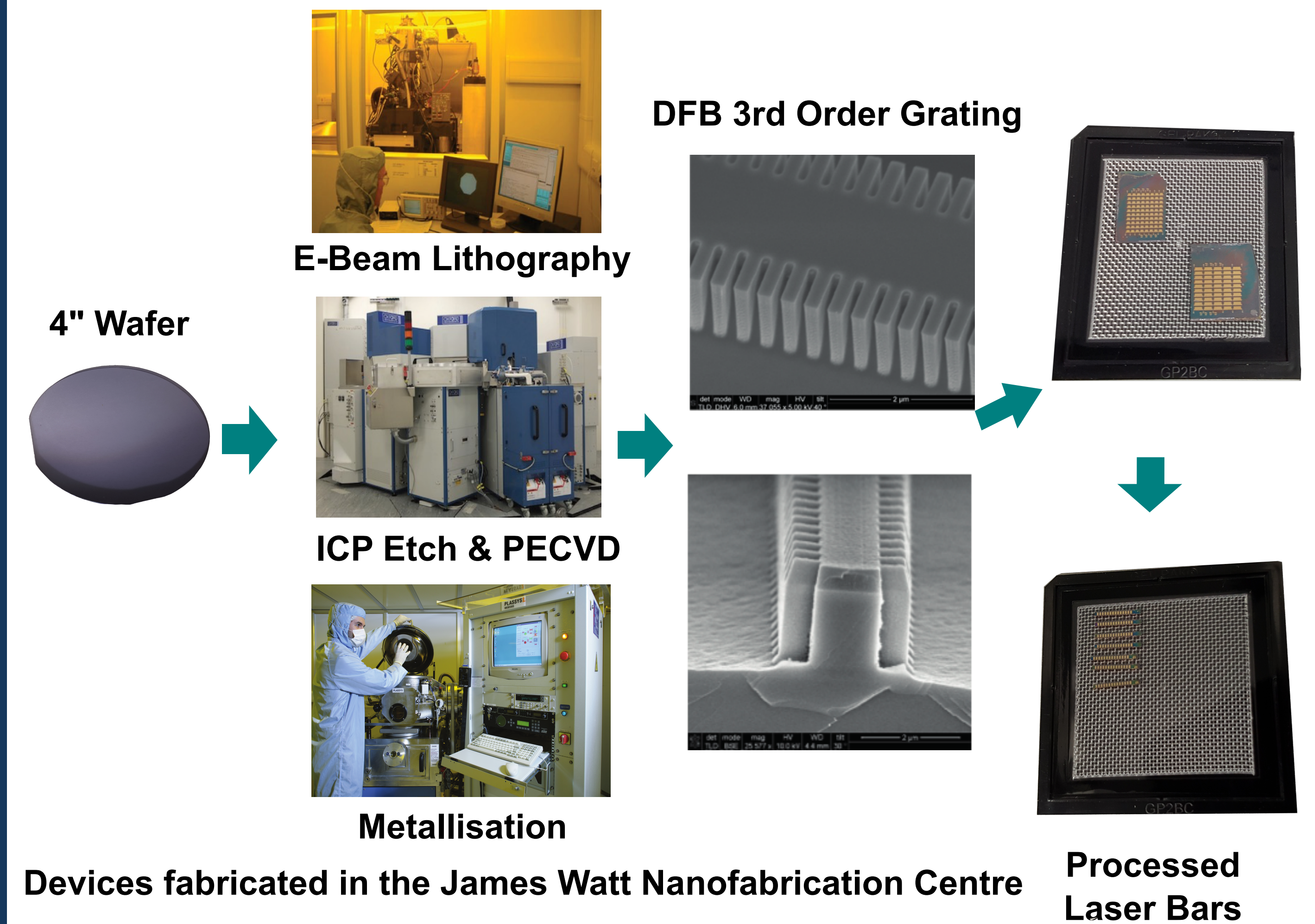


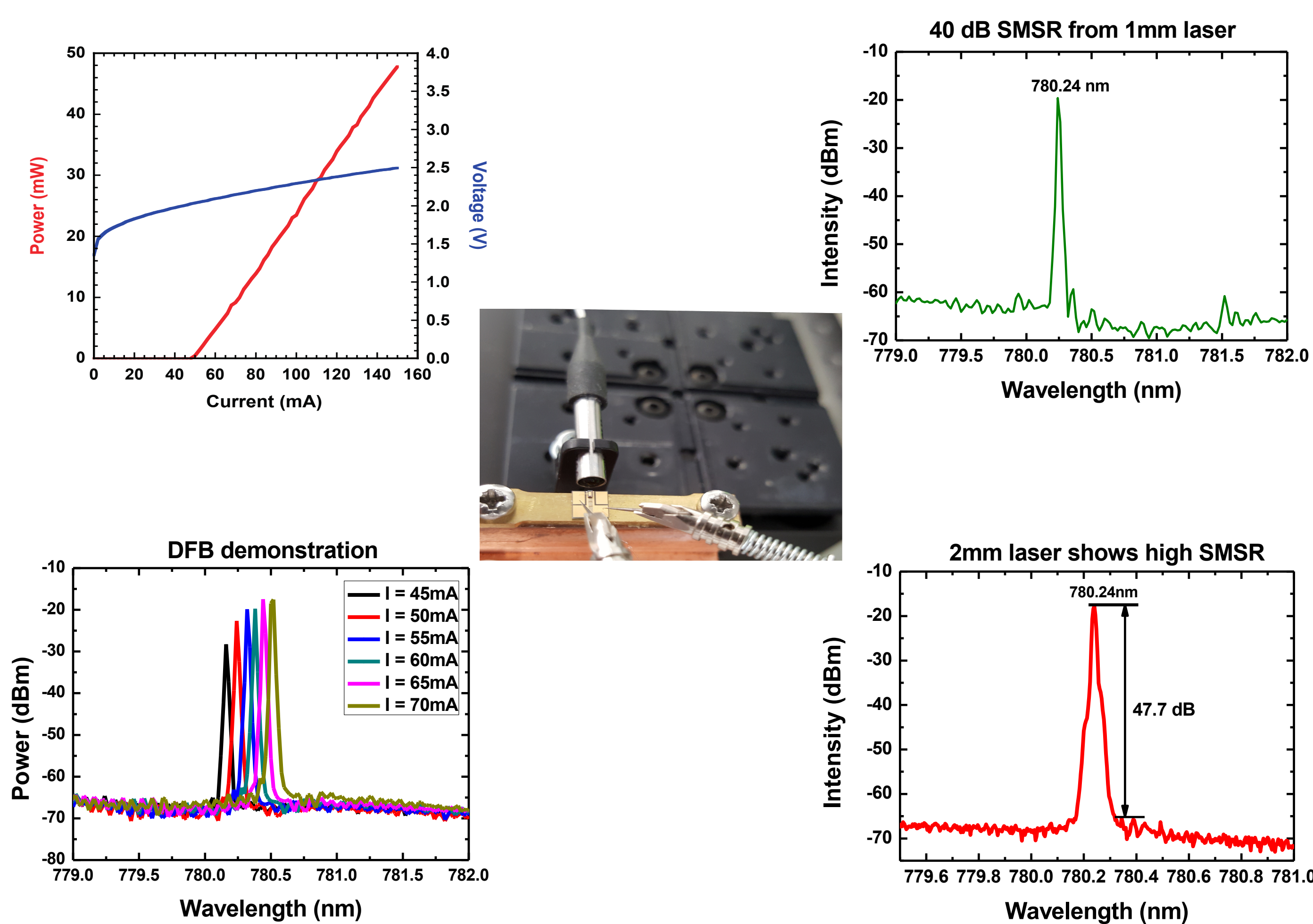
## Background and Aim

- UK QT Hub for Sensors & Metrology partnership project for end user demonstration activities
- Aim to deliver fibre-coupled DFB lasers for cooling & repump packaged in telecoms packages for low cost
- $^{87}\text{Rb}$  D2 Line requires lasers at  $\lambda = 780.24\text{nm}$  with  $\leq 1\text{MHz}$  for cooling
- Packaged, fibre coupled DFB lasers delivered to the Universities of Birmingham, Nottingham, Southampton, Strathclyde & Sussex
- Full UK supply chain exercised for Sovereign Capability

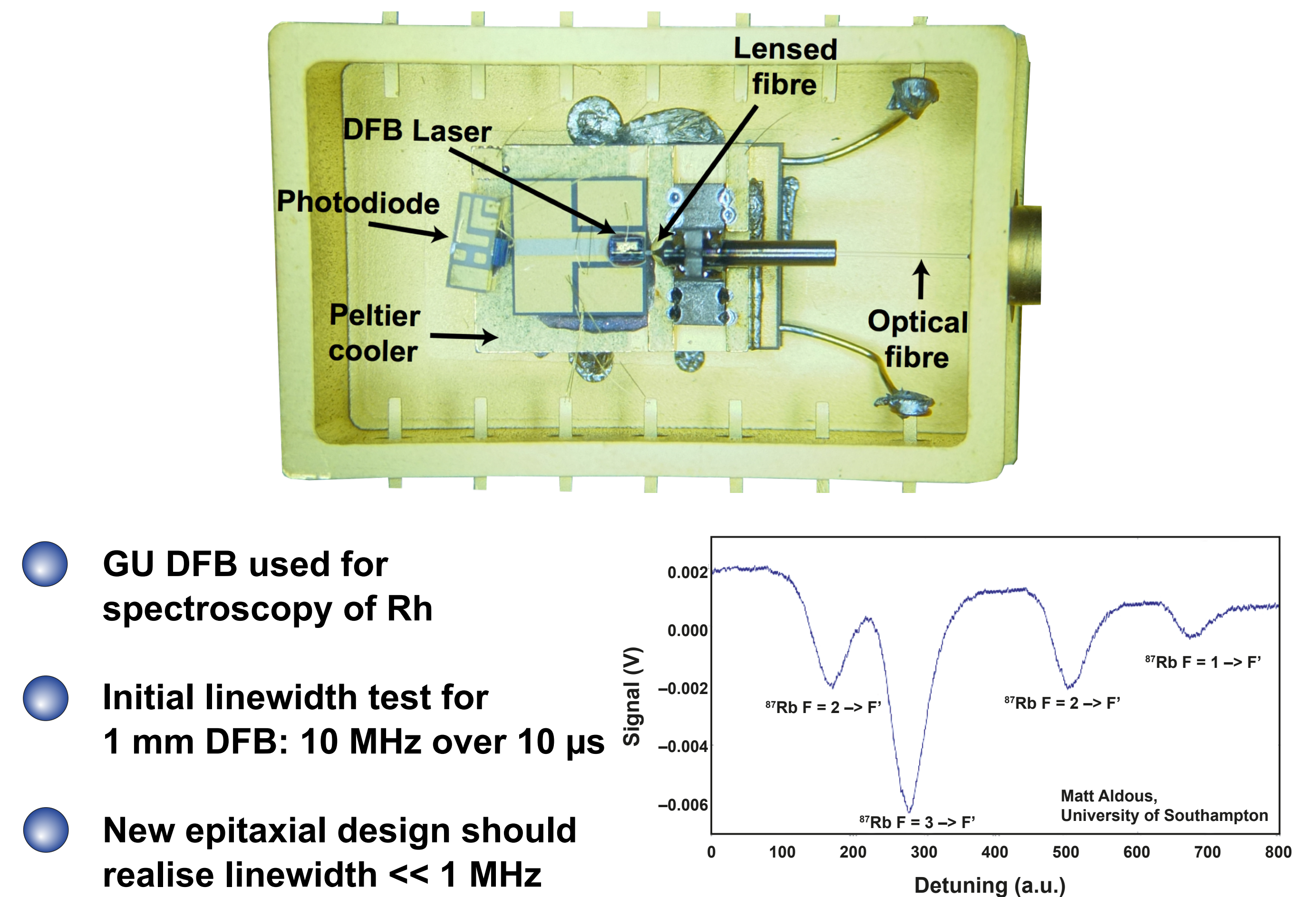
## Fabrication of DFB Lasers at 780.24 nm



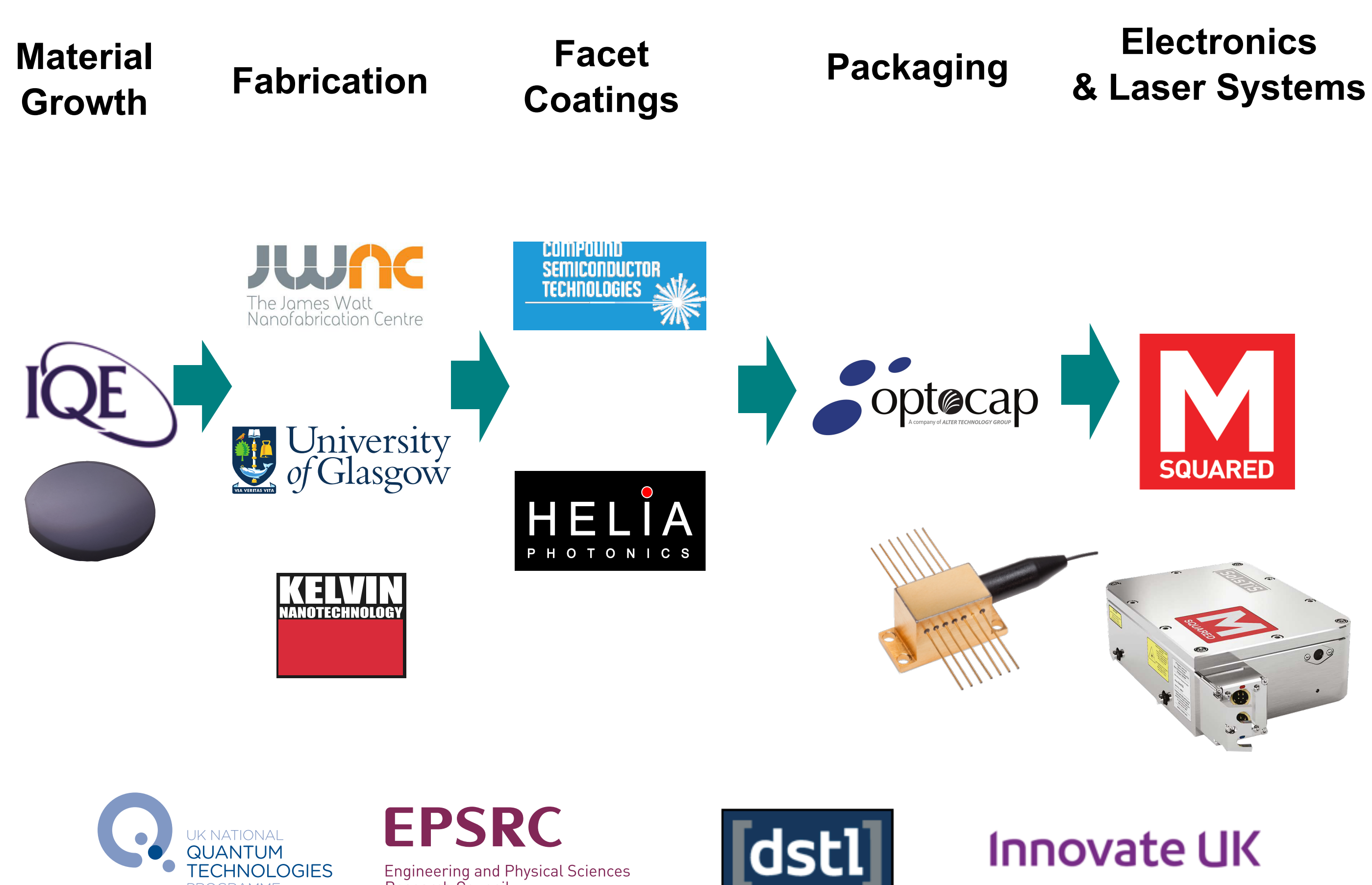
## DFB Laser Performance



## Packaging & Spectroscopy



## Supply Chain



## Future Work & Follow on Funding

- New epitaxial design to double DFB power & increase fibre coupling efficiency. Linewidth will also decrease. AOMs and SOAs to be integrated with DFBs.
- Innovate UK DIFFRACT: Integrated DFB Lasers for Cold Atom Technologies, M Squared Lasers, KNT, Opticap, Universities of Birmingham & Glasgow
- Innovate UK PROPEL: Power Scaled DFB Lasers for Portable Spectroscopy, M Squared Lasers, KNT, Opticap, University of Glasgow
- Innovate UK CoolBlue: Quantum Cooling using Mode Controlled Blue Lasers, CSTG, Universities of Aston & Glasgow
- Innovate UK gMOT: Scalable Manufacture & Evaluation of Miniature Cold Atom Traps, KNT, TMD, Universities of Glasgow & Strathclyde

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