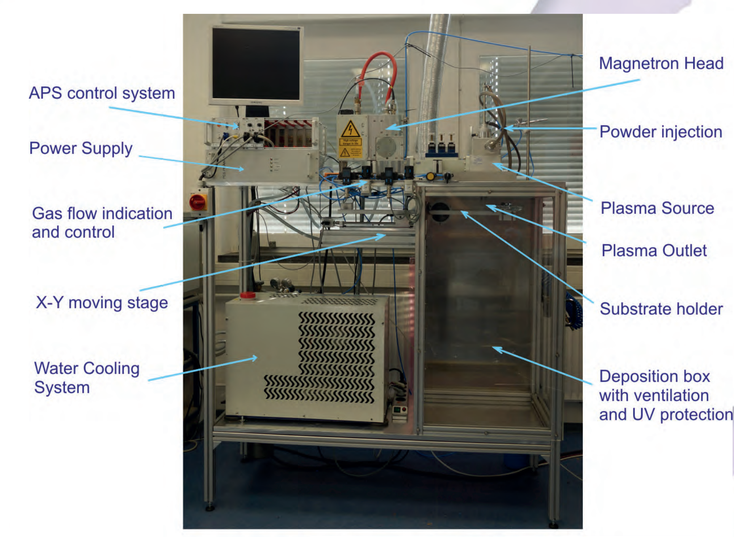
Detectors

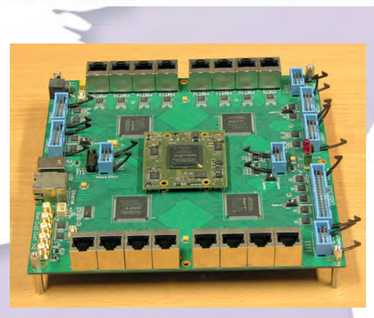
Objectives

1. New technologies for cost effective, large area detectors
2. Evaluate the most promising candidates: ^{6}Li-loaded scintillation detectors and gaseous detectors using solid ^{10}B converters

Development of scintillation detectors

- Hardware for two Wavelength Shifting (WLS) fibre-coded scintillation detectors
- Signal processing schemes for determining when and where neutron events occur
- Scintillation detector based on GS20 glass scintillator with a SiPM readout, scalable hardware, electronics and signal processing

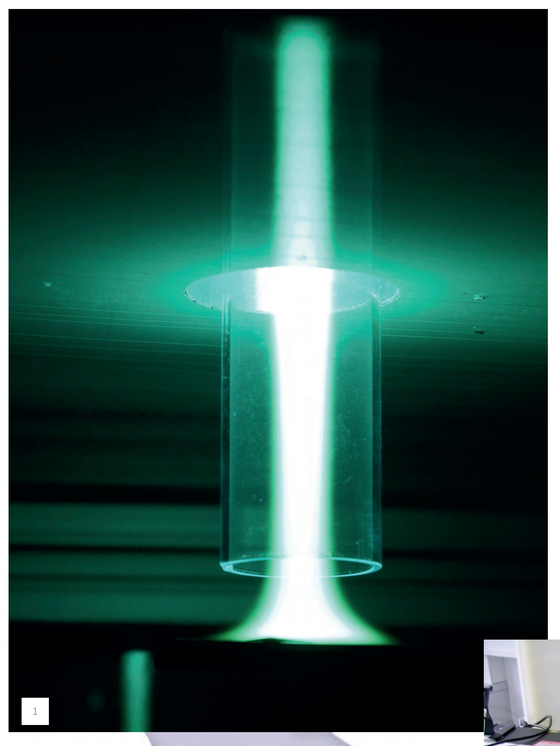


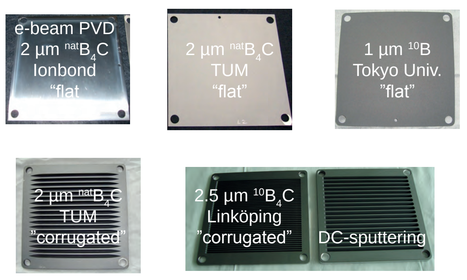


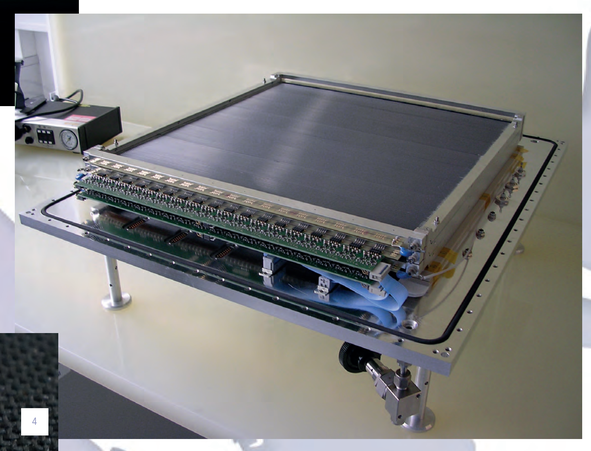
ISIS and PSI high field spectrometers

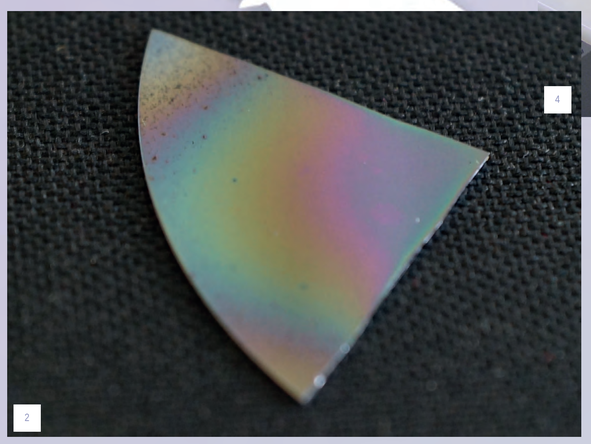
Development of gas detectors based on solid ^{10}B converter

- Performance evaluation of B_4C coatings produced by both magnetron sputtering and electron beam evaporation
- Macro-structured, boron-lined converter offering improved detection efficiency
- Promising technique for producing ^{10}B films: thermal atmospheric plasma deposition
- 2D position sensitive test detector for evaluating the performance of films produced by alternative techniques
- Small test detector to evaluate coatings produced by magnetron sputtering and electron beam evaporation
- Concept detector based on a stack of large area MWPCs
- Concept detector using boron layers in conjunction with bulk Micromegas detector technology









1) The plasma jet when boron is injected. 2) 10B APS sample. 3) Sputtered and evaporated $^{10}B_4C$ coatings. 4) MWPC Concept detector using macro structured converter.

JRA Coordinator
Nigel Rhodes, ISIS
nigel.rhodes@stfc.ac.uk