

Accelerator Science at the University of Manchester Dalton Cumbrian Facility

Thursday 18 September 2014 09:00 (20 minutes)

The University of Manchester's Dalton Cumbrian Facility (DCF) is a new radiation science research centre created in partnership between the University and the nuclear energy industry. DCF incorporates large scale irradiation capability together with high-end material preparation and post-irradiation examination facilities. The primary research aim is to develop a mechanistic understanding of radiation-induced effects and chemical processes to allow a predictive description of materials degradation in nuclear environments.

A central component of the DCF is a 5 MV tandem ion accelerator, dedicated to the challenges faced in dealing with the nuclear legacy and meeting future energy needs. The accelerator, a Pelletron system supplied by National Electrostatics Corporation (NEC), produces Mz^+ ions with energies up to $5(Z+1)$ MeV for both light and heavy ions. DCF incorporates 6 beamlines split between two separate target vaults to allow maximum experimental flexibility. A second accelerator, a 2.5MV light-ion system, will be installed at DCF during 2015 to create a dual beam accelerator system that will expand research capability in materials for next generation reactors.

We will present an outline of the DCF research program and the existing and future capabilities of the DCF accelerator and beamlines in addressing these interests. The presentation will include case studies of recent experiments conducted with the ion beam accelerator and conclude with the planned expansion of experimental capability at DCF to support future research programs, designed to underpin national and international nuclear energy strategies.

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Session Classification: Case Studies