

# In-situ Atomic-Scale Nanomaterials Characterisation

Expertise in the characterisation of nanomaterials using synchrotron techniques, specifically developing in-situ capabilities to probe atomic-structure under real-life operating conditions

#### Competitive advantage

• Direct access to atomic-scale structural information that enables future design strategies for property enhancement for virtually any nanoscale material of defence interest

#### Impact

- Atomic-scale structural information of defence materials under real-life operational conditions
- Structural insights enable the development of new materials with emergent and enhanced properties, irrespective of defence application

## Successful applications

- Atomic-scale structural transformations monitored to 900  $^{\mathrm{o}}\mathrm{C}$
- Observation of electrochemically induced atomic-structure under a large operational voltage range
- Structural changes during deposition techniques, such as chemical vapor deposition and atomic layer deposition
- Structural observations of materials under tensile strain

## **Capabilities and facilities**

- Regular access to worldwide synchrotron facilities
- In-house analysis and modelling capability

#### **Our partners**

- Air Force Research Laboratory (US)
- Edgewood Chemical and Biological Center (US)
- National Renewable Energy Laboratory (US)
- The Australian Nuclear Science and Technology Organisation (ANSTO)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)

# **More Information**

Dr Nicholas Bedford

School of Chemical Engineering

T: +61 (0) 9385 7518 E: n.bedford@unsw.edu.au

UNSW Knowledge Exchange knowledge.exchange@unsw.edu.au www.capabilities.unsw.edu.au

+61(2)93855008