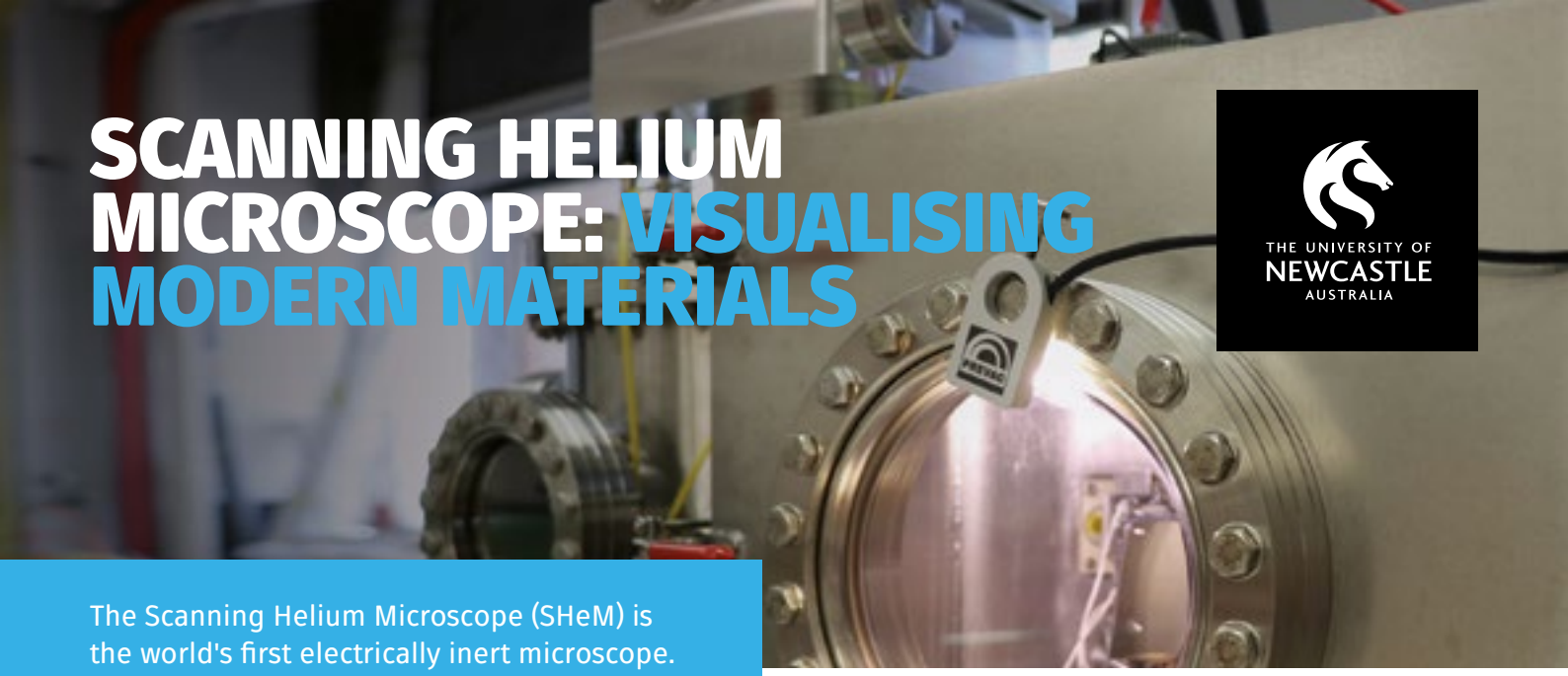

SCANNING HELIUM MICROSCOPE: VISUALISING MODERN MATERIALS

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

The Scanning Helium Microscope (SHeM) is the world's first electrically inert microscope. Produced by our research team in collaboration with key partners, the microscope uses neutral helium to image organic and delicate materials with zero damage. The SHeM is the first new microscope beam type in almost a century (since the electron microscope). It is a new-age microscope geared towards the investigation and development of new-age materials within a rapidly changing context.

COMPETITIVE ADVANTAGE

- Modern defence forces require the use of advanced technologies, including new functionalised coatings and novel thin films, in order to be future-ready; however, these new 'wonder materials' are susceptible to the high energy electrons or photons used in existing microscopies, and therefore prime candidates for neutral helium imaging to play a significant role
- The SHeM allows biological, electronic and explosive materials to be readily imaged without damage

SUCCESSFUL APPLICATIONS OF RESEARCH

- Detection, characterisation and development of sonar- and radar-absorbing coatings and other stealth technologies
- Safe investigation and development of new explosives and other high-energy materials such as propellants and pyrotechnics that are dangerously unstable to conventional techniques

PARTNERS

- University of Cambridge, UK
- United States Army

CAPABILITIES AND FACILITIES

- All operational SHeMs worldwide have been designed, developed and put into operation by our team:
- SHeM prototype one located at University of Cambridge's Cavendish Laboratory
- SHeM prototype two located at the University of Newcastle's Callaghan campus

MORE INFORMATION

PROFESSOR PAUL DASTOOR
Priority Research Centre for Organic Electronics
T: +61 2 4921 5426
E: paul.dastoor@newcastle.edu.au

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