



USER MEETING 2016

24-25 NOVEMBER

National Centre for Synchrotron Science



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Australian Synchrotron

Contribution ID : 284

Type : Oral

FACTORY OF THE FUTURE: COMPOSITE AUTOMATION AND GRAPHENE CERTIFICATION FACILITY

Friday, 25 November 2016 11:30 (15)

Swinburne's Factory of the Future is located in the recently opened \$100 million Advanced Manufacturing and Design Centre at the university's main campus in Melbourne, Australia. The Factory of the Future is one of three pillars of Swinburne's newly launched Innovation Precinct which emphasises design and digital technologies to tackle manufacturing challenges, and pilot production and fabrication processes developed in collaboration with industry. This facility is an intentionally designed platform to demonstrate to Australian manufacturers the principles and benefits of Industry 4.0 concepts and will exploit Swinburne's emerging strengths in composite materials and existing strengths in design, visualisation, robotics, automation and big data.

This presentation will describe the current capabilities of the Factory of the Future and will highlight the future directions for the development of the first Graphene Certification Facility to connect Australian industry into global advanced manufacturing supply chains that use graphene.

There are currently several hundred companies producing or using graphene in their products. Industrial consumers of graphene require material produced at scale that is of replicable quality that meets their specific application needs. There is an urgent need for collaboration across the supply chain to develop standard certification processes that are end user centric, ensuring advanced materials containing graphene are sufficiently well characterized to enable proven supply chain management processes to be followed. The facility will conduct the foundation research required to identify the analytical tools that can be routinely applied to certify graphene products, enabling companies to validate their supply chains.

The facility will utilise significant infrastructure and expertise at the Australian Synchrotron with special focus on SAXS/WAXS and XFM techniques. These techniques are critical for informing different stages of graphene manufacturing such as isolation of graphene from the starting material, to intermediates, and the final product. X-rays can quantitatively inform the success of exfoliation or intercalation of graphene and is particularly useful to demonstrate functionalization. The Swinburne/Synchrotron partnership will play a key role in building unique insight into the translation of research-based characterisation into the manufacturing sector, which in turn will be able to impact the wider advanced materials industry.

Keywords or phrases (comma separated)

Are you a student?

No

Do you wish to take part in the Student Poster Slam?

No

Are you an ECR? (<5 yrs</br>since PhD/Masters)

No

What is your gender?

Female

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Session Classification : Concurrent Session 3: Industry & Innovation

Track Classification : Industry