



## Powder Technologies for Advanced Manufacturing of Metals and Metal-Ceramic Composites

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**Distinguished Lecture Series  
School of Mechanical and Mining Engineering**

**Date**

Tuesday 19 June 2018

**Time**

12:00 pm – 1:00 pm  
Refreshments to follow.

**Venue**

Room 502  
Advanced Engineering  
Bldg. (49)  
UQ, St Lucia

**For more information**

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Powder metallurgy (PM) has become recognised in recent years as a superior way of producing high-quality parts and new advanced materials due to its advantages in material utilization and lower energy consumption, among others. PM is in fact a group of technologies that provide strategies to produce materials with a lower cost/performance ratio by adjusting compositions as well as to design the microstructure by introducing secondary phases or controlling the porosity. Moreover, recent advances in metal additive manufacturing techniques, most of them using powders as raw material, is providing new opportunities for the PM industry. This lecture will present some examples on the role of PM in the development of advanced materials to fulfil the increasing industrial demands. Two particular cases will be discussed: the production of titanium parts and the design of alternative compositions of hardmetals. In both cases, together with the conventional PM process, a new route that has been developed using the combination of colloidal technologies and PM will also be discussed. This strategy uses powders with small to nano particle size; in order to overcome difficulties associated with obtaining the correct dispersion of phases in the case of metal-ceramic composites; to control porosity; to apply coatings, or to prepare new powders for additive manufacturing.