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### **Crossroads of Particle Science and Technology**

This special issue of *Powder Technology* contains 28 selected papers presented at the Joint Conference of the 5<sup>th</sup> UK-China and 13<sup>th</sup> UK Particle Technology Forum, which was held in Leeds U.K. on 12-15 July 2015. Both U.K. and China have developed large communities in the highly interdisciplinary field of particle science and technology over the past few decades. The annual Particle Technology Forum in the UK (UKPTF) has been the archival platform for advancing and communicating the latest progress. The UK-China Particle Technology Forum, which was successfully held in 2007 (Leeds), 2009 (Guiyang), 2011 (Birmingham) and Shanghai (2013), promoted dialogues and communications between UK and China. This joint conference, titled *Crossroads of Particle Science and Technology*, was the first to bring these two events together to further enhance communications between scientists and engineers, and to foster new and substantial collaborations in this exciting field.

The conference was organized by the School of Chemical and Process Engineering, University of Leeds, and supported by the Institution of Chemical Engineers (IChemE), the Chinese Particology Society and the Chinese Multiphase Flow Society. More than 200 researchers participated, not only limited to the UK and China, but also from USA, Australia, Canada, Germany, Netherland, Singapore etc. and was thus a truly international conference. More than 140 papers were presented in a vast range of relevant topics in 20 technical sessions and 14 plenary/keynote lectures. As in the previous editions of the conference, the papers focused on the fundamentals and applications of particle science and engineering. The best papers presented at the conference were invited to this special issue and following the rigorous peer review process of *Powder Technology*, a collection of 28 papers feature in this Special Issue. The papers represent a broad spectrum of fundamentals and applications of particle science and engineering, covering major topics such as particle measurement, particle-particle interactions, and particle processing, modeling and simulation of particle systems, as well as some emerging applications. Among the contributions, fluidization and multiscale simulation attract the major interest. More fundamental investigation of drag models, solids hold-up and minimization fluidization velocity are reported to reveal in-depth information, and unusual fluidization behaviours for nanoparticles and fluidization under supercritical conditions are reported. While CFD is still a popular method, increasing studies are concerned with multiscale simulation to reveal the details and complexities of gas-solids systems, such as DEM-CFD, LES-DEM coupling, as well as GPU based processing. In addition, further study of particle-particle interactions, including particle attrition and differential settling are reported, novel measurement techniques based on ultrasound and imaging, and new nanoparticle-based sensors and carrier free particle inhalers are developed. Such work shows a rapid development of particle technology, and an increasing integration of fundamentals into applications. As such, this special issue reflects the breadth and depth of particle science and technology, especially in the UK and China, and acts as a focal point for further development.

We would like to thank the Elsevier editors, in particular the Editor-in-Chief of *Powder Technology*, Professor L.S. Fan, and the overseeing Editor for this special issue, Professor A.B. Yu, for their consistent support to publish this special issue. We sincerely thank all contributors for their overwhelming response to the call for papers for this special issue, and all reviewers for devoting their precious time to review the papers. Finally, we deeply appreciate the strong and consistent help from all members of the organizing committee of this joint conference, notably Professors Mojtaba Ghadiri, Jonathon Seville, Charley Wu, Richard Williams, Yulong Ding, Andrew Bayly, and Ali Hassanpour.

**Editors:**

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