

Preface to special issue of selected papers from the Eleventh International Conference on CFD in the Minerals and Process Industries (CFD2015)

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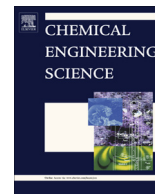
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Preface to special issue of selected papers from the Eleventh International Conference on CFD in the Minerals and Process Industries (CFD2015)



We are pleased to introduce this special issue on CFD in the Minerals and Process Industries that is being included in *Chemical Engineering Science*. This special issue consists of 11 papers presented at the Eleventh International Conference on CFD in the Minerals and Process Industries (CFD2015) that was held in Melbourne Australia on 7–9 December 2015. The conference was the seventh held in Melbourne organized by CSIRO, with the other four in the series held in Trondheim, Norway and hosted by SINTEF. As usual for conferences in this series, CFD2015 featured a broad range of international and local leaders in CFD and its application across chemical engineering.

As with the previous conference three years ago (CFD2012), CFD2015 did an excellent job of outlining the current landscape of CFD capabilities that can be brought to bear on solving complex industrial problems in the process industries. From a chemical engineering perspective, an observation representative of contributions to the latest conference is that users are now increasingly confident in the macroscale modelling options at their disposal for CFD and DEM. Some of the papers selected for the special issue confirm that view, with experimental validation and converged computational studies demonstrating excellent capturing of parametric changes in chemical engineering unit operations, as well as the quantitatively realistic capturing of turbulence and particle interaction phenomena in them. A follow-on observation about the contributions to CFD2015 was the confidence with which Direct Numerical Simulation (DNS) problems were formulated and solved, for subsequent input into modelling of unit operations by research groups. While meso-scale modelling in the mm-scale range tends to still be adequate for modelling of flows in unit operations such as fluidised beds, micro-scale interactions are correctly being recognized as the key to bottom-up improvements to liquid-liquid and gas-liquid systems, making capture of non-continuum effects by CFD models a topic of additional interest in the special issue.

The CFD2015 conference is the first conference in the series that has featured the participation of *Chemical Engineering Science* as a host of a special issue based on papers from the conference. We

are pleased that the *Chemical Engineering Science* special issue complements our long-standing flagship special issue with another Elsevier journal, *Applied Mathematical Modelling*. Whereas the special issue in *Applied Mathematical Modelling* naturally has a greater focus on the techniques and performance of CFD and DEM methods, this *Chemical Engineering Science* special issue provides an avenue for the conference papers that are studying the fundamentals underpinning applications and with impact for chemical engineering practice to be exposed in the mainstream journal literature.

All papers from the CFD2015 conference were significantly expanded in content by their authors, and were subjected to the rigorous reviewing process independently run by *Chemical Engineering Science*. We wish to thank the authors who have expanded their original conference papers into full journal articles, as well as the international reviewers that kindly agreed to review the work to ensure the expanded papers were worthy of inclusion in *Chemical Engineering Science*.

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