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Foreword

Foreword to the Research Front on 'Nano 2014'

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This Research Front is dedicated to cutting-edge research on nanoparticles (NPs) and is based on research presented at the 9th International Conference on Environmental Effects of Nanoparticles and Nanomaterials (ICEENN) held in Columbia, South Carolina, USA, in September 2014. The conference was attended by nearly 150 people from 17 countries, with a series of excellent invited and other oral presentations and poster presentations. In addition to a high-level academic conference, a panel discussion was organised considering the future environmental and health implications of 'next generation' nanoparticles, with a focus on nanohybrids. Nanohybrids are a key development in nanotechnology, which have also been discussed within the pages of this journal.[1] Finally, a highly successful training course and a public day, attended by over 100 people from the public and local schools were organised.

The papers presented here originated from the conference but went through the usual stringent peer-review process and represent some of the best work on environmental nanoscience and the ecotoxicology of nanoparticles available. The Research Front starts with Cross et al.[2] who give a detailed review of the fate, behaviour and impacts of inorganic nanoparticles in sediments, concluding with a discussion of the current state of the art and a priority list for much needed future research. The issue continues[3] with methodological development and data for metal NP concentrations in earthworms, allowing bioaccumulation to be quantified. Khan et al.[4] further present a study of the critical effects on aggregation of carbon nanotube (CNT) chirality, an important physical property of CNTs. The paper illustrates the significance of NP physico-chemistry on environmental fate and toxicology. This collection concludes with two papers considering and quantifying bioaccumulation and bioavailability. Kalman et al.[5] investigated biouptake rates of Ag NPs with different coatings through aqueous and dietary exposures, showing food was the primary pathway for uptake in *Daphnia magna*. Goodhead et al.[6] investigated the bioavailability of ceria NPs in fish, showing that experimental conditions played a significant role in biouptake, with natural organic macromolecules enhancing uptake to gill tissue in particular.

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