Editorial

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May I extend a very warm welcome to this first editorial of the new international journal *Bioinspired, Biomimetic and Nanobiomaterials*. This new publication is devoted to researchers from a broad cross-disciplinary spectrum of academic and technological backgrounds in materials science and engineering, biomedical materials and devices, tissue engineering, physics, chemistry, biology, medicine, nanoscience and system modelling.

In contrast to our human perception of time, nature and the participating species within the Darwinian world continue to evolve imperceptibly slowly. Fortunately, this has provided us with great opportunities to study and learn from nature that, for over 500 million years, has been active in its own multifarious, yet highly energy-efficient research and development to optimize designs, processes and functionalities. It is only in the last decade however that we have begun to realize benefits that an in-depth scientific and technical understanding of the mechanisms operative in nature can bring to humanity.

The subject area is still in its infancy, and therefore the potential of this emergent field of research and dissemination is yet to be fully realized in terms of advancement of current knowledge as well as its future medical and non-medical applications. However, the significant challenges that lie ahead are in our ability to interact and consolidate a vast pool of multidisciplinary expertise currently available to scientists and technologists alike. Consequently, this interactive bioinspiration and biomimicry will help researchers usher in a new era to design, develop, synthesize, formulate, fabricate, model and apply advanced and novel biomimetic materials, processes and devices for wide-ranging medical as well as non-medical applications.

This new journal promises to provide a scholarly platform to researchers of different subject specialism so as to disseminate – under the one journal heading – these various strands of diverse scientific and technical knowledge. Thus, an exciting opportunity exists to foster dynamic linkage between the engineering and physical sciences, and biology and medicine. The flow of ideas and innovation by the research community, via networking without boundaries, is one of the key drivers to meet the objectives of this journal.

Bioinspired, biomimetic and nanobiomaterials are rapidly emerging as the most promising areas of research and scholarship that fall within a broader subject domain of biological materials science and engineering. Current literature reveals that there are ever-increasing numbers of national and international scientific and technical conferences, meetings and workshops on bioinspired, biomimetic and biomaterials related research themes. I strongly believe that the

introduction of this new journal covering these emergent areas is not only timely, but also presents a paradigm shift in the development of a multidisciplinary research strategy with an extremely bright future.

There are many notable successes and much development in this exciting new area. Researchers are engaged in developing bioinspired and biomimetic systems – from the mundane to the elegant. The examples are numerous and the possibilities are endless: biomimicked spider silk formulations (Porter and Vollrath, 2009; Kojic *et al.*, 2006); biomimetic glue (Ball, 2010) and adhesives (Geim *et al.*, 2003); antireflective and light-trapping biomimetic optical and communication devices (Parker and Townley, 2007; Parker *et al.*, 2003); biomimetic materials chemistry (Aizenberg, 2004) via biomineralization; nanobiomaterials, nanoceramics and bioglasses for clinical and non-clinical applications (Vallet-Regi and Arcos, 2008); nanobiotechnology (Rodríguez-Cabello *et al.*, 2007); enzyme-templated bone minerals (Spoerke *et al.*, 2009); butterfly-inspired solar cells (Zhang *et al.*, 2009) and cells mimicking sponges (Woesz *et al.*, 2006; Bullis, 2006). Various other examples include biomimetic sensors, surfaces, biointerfaces, membranes as well as nature-inspired designs ideal to be adapted to possible technology breakthroughs in automotive, aviation and space industries. Few examples of the cited work are illustrated in Figures 1 to 3.

The current and the future technological significance of this focussed approach is immense and far reaching in many diverse biosystems and biomimicked applications. Underpinned by fundamental science and engineering, typical areas of research interests are outlined in the scope of the journal (http://www.icevirtuallibrary.com/upload/BBN_scope.pdf). Certain emphasis is given, among others, to multiscale designs, structures, processing and characterization, biointerfacial strategies, material and system complexities, sensing and diagnostics, as well as to modelling at micro- to nano-size range. Prospective authors are encouraged to explore these topics but, if preferred, are also free to peruse other relevant subtopics allied to the generic journal themes.

Authors are invited to submit their manuscripts on any of the above topics. Letters for short communications, full length manuscripts for regular papers, and those discussing the state-of-the-art on certain specific areas of interest in the form of review papers can be submitted on the journal's online peer review website. The overall aim is to inform, disseminate, integrate and highlight the multidisciplinary aspects of the journal. We will commission special issues on topical research themes, and distinguished guest editors will be sought.

Figure 1. Silk as an ideal biomimetic polymer (abstract image: Porter & Vollrath, 2009)

The quality and impact of any journal, especially for a newcomer, is dependent on the key roles played by the Editorial Board: it is their guidance and advice which are vital for the success of the journal. In this regard, we are very fortunate to have been able to assemble

a most distinguished and high-quality international editorial board, whose members are extremely positive towards the aims and scope of this journal and are very keen to steer the journal to success.

Bioinspired, Biomimetic and Nanobiomaterials will be published by ICE Publishing, a well-established publishing house associated with the Institution of Civil Engineers (ICE). Founded in 1818 and given Royal Charter status in 1828, the ICE and ICE Publishing provide a variety of scholarly and professional materials in science and engineering that dates back to 1836. Their online Virtual Library platform is a major new resource offering access to the digitized archive of internationally renowned journals from the ICE, providing access to more than 20 000 articles, making it one of the largest full-text engineering and science repositories in the world.

The ICE Virtual Library website (<http://www.icevirtuallibrary.com>) is easy to navigate, and paper submissions and peer reviewing are handled electronically. Articles are abstracted and indexed in a variety of databases and will be made available in print and online, with online articles being published ahead of the print issue, as soon as they have been accepted, enabling authors and researchers to cite the latest work. To submit an article for peer review, visit the journal's online submission site: <http://www.editorialmanager.com/bbn>

Finally, I would like to invite you to share my excitement that this journal offers a unique approach in scholarly publications, with its strong emphasis on interdisciplinary research focus, new directions and high-quality forum for a rapidly growing scientific community in both medical and non-medical sectors. I would also welcome any

Figure 2. Enzyme-mediated formation of nanoscale hydroxyapatite illustrating peptide amphiphile self-assembly into fibrous bundles of peptide nanofibers about 5–7 nm in diameter (SEM and TEM images: Spoerke *et al.*, 2009)

Figure 3. Butterfly-wing-inspired novel photoanode device (optical and FESEM images: Zhang *et al.*, 2009)

comments, views and suggestions from members of the research community that may have a direct guiding impact on any issues relating to the aims and scope of the journal.

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