
Editorial

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Biographical notes: Waqar Ahmed is a Visiting Professor at Manchester Metropolitan University and the Professor of Nanotechnology at the University of Central Lancashire. His research studies are focused on thin film deposition and nanostructured materials.

Mark J. Jackson is the Professor of Mechanical Engineering at Purdue University. His research interests include machining, biomaterials and micro and nanomanufacturing.

Christina A. Mitchell is a Senior Lecturer and Consultant in Restorative Dentistry as well as an Adjunct Professor at the School of Dentistry at University of Minnesota. She also works as an Academic Partner in Medical Polymer Research Institute, QUB and at Minnesota Dental Research Center for Biomaterials and Biomechanics. Her main subject areas were Restorative

Dentistry and Dental Biomaterials. Her research interests are in the field of dental biomaterials, failure of adhesive interfaces of luting cements and dental substrates, use of fracture mechanics to determine the likely clinical performance of dental restorative materials, clinical trials of new restorative materials, use of profilometry to quantify marginal fit of full-coverage crowns, iatrogenic abrasion of teeth, retention of excess cement following crown cementation and use of nanoparticles in dental restorative materials.

Nanotechnology is being used to change the way that surgical and cosmetic procedures are undertaken in terms of the use of nanomaterials and nanostructured coatings used for surgical procedures. Currently, there is a great deal of research and development being made in the area of dental nanomaterials, implants and devices. This Special Issue of the *International Journal of Nano and Biomaterials* presents new information about the current developments in dental nanomaterials, implants and devices and is a compilation of papers specially selected for publication by highly respected academic researchers.

The papers presented include a lively discussion about the use of diamond coatings machining and drilling dental materials. The paper by Jackson et al. explains how diamond coatings survive the rigours of working in severe and demanding environments, especially the oral environment. A paper by Shokufar et al. explains how the mechanical properties of nanocomposite hydroxyapatite (HA)/PMMA/Carbon Nanotube (CNT) coatings can be modelled and how these coatings are used on implants. Dental resin composites are discussed by Silikas et al. who describe how nanoscale fillers can be incorporated in these resins in order to improve the characteristics of the composite material, whilst Hill et al. describe the use of montmorillonite clays to strengthen bone cement. Nanoindentation of orthodontic wires is explained by Alcock et al. and the variation in elastic modulus and hardness is explored using stainless steel as the orthodontic material. The use of diamond coated molybdenum burs is further developed by Ahmed et al. who conducted a finite element analysis and experimental determinations of machining conditions for processing cobalt-chromium alloys that are used for constructing orthodontic bridgework. Further analyses of PMMA nanocomposites is characterised by Okpalugo et al. who explain how the polymeric material is treated in a gaseous atmosphere.

The guest editors wish to thank the contributors of the articles contained in this Special Issue and wish to thank the referees for providing timely reviews of the papers. The editors also wish to thank Inderscience for providing the opportunity to publish these specially selected papers for this Special Issue of the *International Journal of Nano and Biomaterials*.