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Editorial

Foreword

In past few years, the development of biocompatible and biocomposite materials for bio-medical and environmental engineering applications has been progressively increased. As you may be aware of that the field of biomaterials has evolved from individual medical researchers, materials scientists and bio-medical engineers innovating to save the lives for many patients in the sophisticated, regulatory/ethics-driven multidisciplinary endeavor we see today, over the past decades. Besides, the use of biodegradable composites can prolong the life of our planet with reducing pollutants and solid wastes during the manufacturing process and disposal of products, which in turn, retarding the running out of natural resources. In this regard, Composites Part B: Engineering has launched this special issue named "Bio-engineered Composites" to provide a common platform for all world's leading scientists and researchers to share their ideas and information, based on their outstanding research achievements in the fields of biocompatible and biodegradable engineered composites. All articles submitted to this special issue cover the areas of (i) literature review, (ii) materials and mechanical characterization, (iii) biocompatibility and (iv) manufacturing process of different biocompatible and biodegradable materials. A short description of each article is addressed as follows:

Paper 1:

Authors: Hoi-Yan Cheung, Kin-Tak Lau, Tung-Po Lu, David Hui

"A critical review on polymer-based bio-engineered materials for scaffold development" – *This paper provides a comprehensive review on bio-composite and degradable materials for real-life applications.*

Paper 2:

Authors: Jie Wei, Yubao Li, Kin-Tak Lau

"Preparation and characterization of nano apatite/polyamide$_6$ bioactive composite" – *Nano apatite and polyamide$_6$ composite has an excellent bioactivity which could be used for bone repair.*

Paper 3:

Authors: Kong Yang, Chaoyuan Wang, Jie Wei

"A study on biocomposite of nano apatite/poly (1,4-phenylene-sulfide)–poly(2,4-phenylene-sulfide acid)" – *Biocomposite of nano apatite and poly(1,4-phenylene-sulfide)–poly(2,4-polyenylene sulfide acid) copolymer was a potential bioactive material to be used as load-bearing implants or fixation in bone replacement.*

Paper 4:

Authors: Hua Hong, Jie Wei, Changsheng Liu

"Development of asymmetric gradational-changed porous chitosan membrane for guided periodontal tissue regeneration" – *A novel kind of guided tissue regeneration (GTR) barrier membrane with excellent biocompatibility and biodegradation had asymmetric gradational-changed porous structure which also maintained the structure integrity for 5–6 weeks degradation in the enzyme solution.*

Paper 5:

Authors: Jiashen Li, Arthur F.T. Mak

"Transfer of collagen coating from porogen to scaffold: Collagen coating within poly(DL-lactic-co-glycolic acid) scaffold" – *Using paraffin spheres as porogen and vehicles, collagen coating, which was coated on the surface of paraffin spheres, was transferred uniformly onto the internal pore surface within poly(DL-lactic-co-glycolic acid) (PLGA) scaffold after paraffin spheres were removed.*

Paper 6:

Authors: Osnat Hakimi, David P. Knight, Fritz Vollrath, Pankaj Vadgama

"Spider and mulberry silkworm silks as compatible biomaterials" – *A review of the wide range of excellent properties observed in different silk types and assessment of the biocompatibility and potential of silk fibres and silk-based materials for biomedical purposes.*

Paper 7:

Authors: Chiung-Chih Lin, Woei-Shyong Lee, Chang-Chun Sun, Wen-Hwa Whu

"The influences of bismuth antimony additives and cobalt manganese dopants on the electrical properties of ZnO based varistors" – *The optimun electrical properties of ZnO varistors can be obtained by using adapted dopants/additives ratio which leads to adapted grain conductivity/barrier height ratio.*

Paper 8:

Authors: Liming Fang, Ping Gao, Yang Leng

"High strength and bioactive hydroxyapatite nano-particles reinforced ultrahigh molecular weight polyethylene" –

1359-8368/$ - see front matter
doi:10.1016/j.compositesb.2006.06.007

Hydroxyapatite nano-particles reinforced UHMWPE has been successfully processed, and this composite exhibits a tensile strength comparable with nature and a good ability to induce calcium phosphate formation in simulated body fluid.

Paper 9:

Authors: Wanjun Liu, Lawrence T. Drzal, Amar K. Mohanty, Manjusri Misra

"Influence of processing methods and fiber length on physical properties of kenaf fiber reinforced soy based biocomposites" – *This paper discusses fabrication and properties evaluation of biocomposites from kenaf fiber and soy based bioplastic that are processed by extrusion compounding, followed by either injection molding or compression molding. The important observation from this paper is that; modulus of kenaf fiber-reinforced soy-based composites processed by compression molding increases with increases in fiber length and fiber content, which resulted in increase in heat deflection temperature (HDT).*

Paper 10:

Authors: Yunqiao Pu, Jianguo Zhang, Thomas Elder, Yulin Deng, Paul Gatenholm, Arthur J. Ragauskas

"Investigation into nanocellulosics versus acacia reinforced acrylic films" – *This study quantifies the effects of three different cellulosic structures, acacia pulp fibers, cellulose nanoballs and whiskers for the preparation of composite acrylic films, with the latter yielding exceptional improvements in physical strength properties.*

Paper 11

Authors: M.S. Huda, L.T. Drzal, A.K. Mohanty, M. Misra

"The effect of silane treated- and untreated-talc on the mechanical and physico-mechanical properties of poly(lactic acid)/newspaper fibers/talc hybrid composites" – *This paper evaluates the effect of silane treated- and untreated-talc fillers on the mechanical and physico-mechanical properties of poly(lactic acid) (PLA)/recycled newspaper cellulose fibers (RNCF)/talc hybrid composites and it also shows that there are distinct advantages in modifying the surfaces of fillers before incorporation into composites, since they offer marked improvements in the ease of adhesion with, and dispersion within the matrix.*

Paper 12:

Authors: Dipa Ray, N.R. Bose, Amar K. Mohanty, Manjusri Misra

"Modification of the dynamic damping behaviour of jute/vinylester composites with latex interlayer" – *An introduction of a latex interlayer at the fibre/matrix interface of a jute reinforced vinylester resin matrix composites can significantly improve their damping capacity, making them highly resistant against vibration and imparting them necessary properties required for various structural applications.*

Paper 13:

Author: Blanka Říhová

"Biocompatibility and immunocompatibility of water-soluble polymers based on HPMA" – *HPMA copolymer-bound drugs represent a very efficient treatment of experimental cancer as they have both cytostatic and immunomobilizing activity operating at different times after the treatment.*

Paper 14:

Authors: Andreas A. Sapalidis, Fotios K. Katsaros, George E. Romanos, Nickolas K. Kakizis, Nick K. Kanellopoulos

"Preparation and characterization of novel poly-(vinyl alcohol)–*Zostera* flakes composites for packaging applications" – *The main technical and scientific interests are focused on the preparation and characterization of novel biocomposite films consisting of PVA and Zostera flakes. The improved thermomechanical behavior and the gas barrier properties of the produced films offer a very promising biodegradable material for packaging applications.*

Paper 15:

Authors: A.L. Martínez-Hernández, C. Velasco-Santos, M. de-Icaza, Victor M. Castaño

"Dynamical–mechanical and thermal analysis of polymeric composites reinforced with keratin biofibers from chicken feathers" – *Improvement of thermal-mechanical propoerties of acrylic engineering polymers through biofibres.*

Paper 16:

Authors: Z.F. Fan, P. Smith, F. Rauch, G.F. Harris

"Nanoindentation as a means for distinguishing clinical type of osteogenesis imperfecta" – *Although Elastic modulus (E) and Hardness (H) measured by nanoindentation did not show significant differences between Osteogenesis Imperfecta (OI) type III and IV bone, the ratio of E/H did exhibit a significant decrease for OI type III, which indicates the possibility that nanoindentation could be used to distinguish the differences of bone material properties at the tissue level among OI clinical groups.*

The editors would like to express their sincere appreciation and thanks to all the authors and co-authors for their scientific contribution to this special issue of "Composites Part B: Engineering". We convey our gratitude to all the reviewers for their time and dedication. We applaud Elsevier Science for their support and encouragement of this special issue and their staff for their special attention and timely response.

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