BioMed Research International

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Special Issue on

3D Printing in Orthopedics: Dawn of Mainstream Clinical Usage

CALL FOR PAPERS

3D printing is one of the most disruptive technological innovations of the 20th century, which is forcing reevaluation of traditional approaches in virtually every industry. Within the last 3-5 years, 3D printing in orthopedics has entered a new phase with its use in mainstream clinical practice. A number of developments in the field make this topic especially relevant today. Metal 3D printing has reached a level of maturity where implant components can be reliability manufactured for in vivo use. While standardization is still an ongoing process, regulatory agencies are getting more familiar with 3D printing and a variety of 3D printed implants and instrument technologies have been cleared by the FDA and other international agencies. Significant progress has been made in process validation, and the productivity and economics of 3D printing are becoming increasingly competitive with traditional casting and forging technologies. Entry of 3D printing into mainstream clinical practice is evidenced by recent introductions of 3D printed implants for hip, knee, spine, ankle, and other joints, by several large orthopedic manufacturers. Nonetheless, we are still in the early stages of understanding what the future of 3D printing in orthopedics will look like, especially given the increasing pressures faced by the healthcare industry as a whole.

The goal of this special issue to is to publish high-quality original research articles and reviews, which would enable the scientific community to answer many of the pending questions related to the clinical, economic, and patient benefits of 3D printing, and discover new opportunities in the form of new applications, design methodologies, biomaterials, and so on.

Potential topics include but are not limited to the following:

- Design of porous structures for improved tissue ingrowth
- Patient-specific implants
- Patient-specific surgical instrumentation
- Novel design methodologies
- Novel biomaterials
- Biofabrication
- Preclinical evaluation of new devices, biomaterials, and so on
- In vivo performance of 3D printed implants, biomaterials, and so on
- Clinical outcomes resulting from use of 3D printed technologies
- Use of 3D printing technologies to improve surgical efficiency
- Impact of 3D printing on healthcare costs

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/bmri/orthopedics/3dpo/.

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Manuscript Due
Friday, 13 January 2017

First Round of Reviews
Friday, 7 April 2017

Publication Date
Friday, 2 June 2017