Editorial: Special Issue: 50 Years of Bioactive Glasses: celebratory special issue in “Biomedical Glasses”

Editorial

Guest editors: Prof. Julian Jones (London, UK), Prof. Francesco Baino (Turin, Italy), Prof. Aldo R. Boccaccini (Erlangen, Germany)

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1 Introduction

Even if the first paper of Prof. Larry Hench that introduced bioactive glass and its properties was published in 1971 (the seminal paper in J. Biomed. Mater. Res. [1]), the actual discovery of bioactive glass and its bone bonding properties dates back to 1969, in the laboratory of Prof. Hench at University of Florida, USA. Over the last 50 years, bioactive glasses, originally intended for applications as bone substituting materials and small orthopedic implants, have expanded in their functionalities and applications, based on innovative chemical compositions and novel processing techniques, to areas such as biomedical coatings, dental care, scaffolds for tissue engineering, and as components of advanced devices for drug delivery, wound healing, soft tissue repair and potential uses in cancer treatment.

The present special issue in "Biomedical Glasses" marks the 50th Anniversary of bioactive glass, including a collection of papers written by members of the bioactive glass research community, on a great variety of topics related to the development, properties and applications of bioactive glasses.

The collection includes a review paper by David Greenspan, who was the main driving force behind the commercialization of Bioglass (the original bioactive glass composition) and subsequent products that evolved from it, from bone grafts to toothpaste. David summarizes the early development of bioactive glasses and highlights the legacy of Prof. Hench in the broad biomaterials field [2]. Another review paper, by the group of Edgar Zanotto, covers the emerging field of bioactive magnetic glass-ceramics for cancer treatment [3]. Application of bioactive glasses in bone cements is discussed in the papers of Wetzel *et al.* [4] and Mokhtari *et al.* [5], while applications of different bioactive glasses in bone tissue engineering scaffolds are covered by the papers of Brokmann *et al.* [6], and Barberi *et al.* [7] and the field of wound healing and antibacterial effects of bioactive glasses is the subject of the paper of Jung *et al.* [8]. The special volume includes also several papers featuring the growing field of bioactive glasses incorporating biologically active ions, in this case: Cu [5], Mg [9], Zn [10], B [8, 11–13], F [14–16], Ag [15], Gd [17]. These studies cover fundamental investigations on the structure, crystallization behavior, thermal properties, biocompatibility, bioactivity, dissolution kinetics and biodegradability of a series of bioactive glasses of silicate, phosphate and borate composition, obtained by melting or sol-gel methods.

We hope that the present volume will represent a valuable source of information for bioactive glass researchers and that it will be seen as a fitting collection to commemorate the 50th Anniversary of bioactive glass and the legacy of Prof. Larry Hench.

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