# Advances in Bioceramics and Porous Ceramics VIII

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*Volume Editors*

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# Advances in Bioceramics and Porous Ceramics VIII

## *A Collection of Papers Presented at the 39th International Conference on Advanced Ceramics and Composites January 25-30, 2015 Daytona Beach, Florida*

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# Preface

This issue contains the proceedings of the “Next Generation Bioceramics” and “Porous Ceramics: Novel Developments and Applications” symposia of the 39th International Conference and Exposition on Advanced Ceramics and Composites (ICACC'15), which was held from January 25–30, 2015 in Daytona Beach, Florida, USA.

A rapidly growing area of ceramic science & technology involves the development of novel ceramic materials that facilitate the diagnosis and/or treatment of medical conditions. Bioceramics researchers have recently developed several types of bioinspired and biomimetic ceramics, which imitate attributes of materials found in nature. The “Next Generation Bioceramics” symposium addressed several areas associated with processing, characterization, modeling, and applications of bioceramic materials. Topics covered by the symposium included processing of advanced bioceramic materials; bioinspired and biomimetic ceramic materials; biomineralization; self-assembly of bioceramic materials; inorganic-organic composite materials; nanostructured bioceramic materials; mechanical properties of bioceramic materials; in vitro and in vivo characterization of bioceramic materials; bioceramic materials for drug delivery; bioceramic materials for gene delivery; bioceramic materials for sensing; and bioceramic materials for dental applications. This symposium facilitated numerous productive discussions among various groups in the bioceramics community, including academic researchers, industrial researchers, governmental researchers, and graduate students.

The symposium on porous ceramics was very well attended, with presentations given by people from academia and industry, confirming that the topic is of great interest and that continuous progress is being made both in university labs and R&D industrial facilities. In particular, researchers are striving to expand the range of porous architectures achievable, by devising novel and improved processing methods, the type of materials being produced with high levels of porosity (e.g. geopolymers), and the applications for highly porous ceramics. At the same time, advances in characterization techniques, such as Computed Tomography coupled with modeling, as well as in Additive Manufacturing-based fabrication techniques are increasingly demonstrating to be a key factor in the development of ceramic components with optimized porous architecture and properties. We are looking for ward to the next symposium, in which the new innovations in this exciting field will be presented.

We would like to thank the staff at The American Ceramic Society and John Wiley & Sons for making this proceedings volume possible. We would also like to acknowledge the efforts of the authors and reviewers, without whom this volume would have not been possible. We also thank the leadership of the Engineering Ceramics Division of The American Ceramic Society, including Michael Halbig, Tatsuki Ohji, Andrew Gyekenyesi, Jingyang Wang, and the 2015 Program Chair, Soshu Kirihara, for their tireless efforts. We hope that this volume becomes a useful resource for academic and industrial efforts involving porous ceramic materials and bioceramic materials. Finally, we hope that this volume facilitates advances in ceramic science & technology and contributes to the leadership of The American Ceramic Society in these emerging areas.

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