



Biological Translation: Biological Materials Science and Bioinspired Design

STEVEN E. NALEWAY ^{1,6} DHURUV BHATE,² DAVID RESTREPO,³
KALPANA KATTI,⁴ and LING LI⁵

1.—University of Utah, Salt Lake City, USA. 2.—Arizona State University, Mesa, USA.
3.—University of Texas, San Antonio, San Antonio, USA. 4.—North Dakota State University,
Fargo, USA. 5.—Virginia Tech, Blacksburg, USA. 6.—e-mail: steven.naleway@mech.utah.edu

The interconnected fields of biological materials science and bioinspired design offer the potential to better understand and harness lessons learned from nature. Biological materials science employs the tools and techniques of chemistry, physics, and engineering to understand how biological organisms thrive in their natural environments. Bioinspired design employs this information to advance manufacturing techniques to fabricate advanced materials and structures that can provide benefit to a variety of engineering and scientific fields.

This special topic in *JOM* comprises eight articles, including six invited from leaders in the fields of bioinspired design, biological materials science, and biomaterials. Articles focusing on the field of biological materials science cover important topics, such as collagen damage in cortical bone and dentin (Wu et al.) and the influence of canal and osteocyte lacunae defects on toughness in diabetic rat bone (Woolley et al.). Articles focusing on the field of bioinspired design include studies on metamaterials based on lipid cubic phases (Zhao et al.), hierarchical and bioinspired structures with controlled roughness and hydrophobicity (Tang et al.), the

physical properties of biomimetic fibrous gelatin networks (Wheeler and Oyen), bioinspired composites with curved multilayer microstructures (Chan et al.), biocompatible scaffolds infused with fish-scale based hydroxyapatite (Rangari et al.), and a framework for the selection of biomaterials for sustainable green products (Al-Oqla).

Taken together, these high-quality articles are presented as an assortment of the wide range of impactful science that the fields of biological materials science and bioinspired design offer. In addition, the editors hope that these articles will act as inspiration for future scientific efforts to both understand and be inspired by biological materials.

All titles and authors of the articles published under the topic “Biological Translation: Biological Materials Science and Bioinspired Design” in the July 2023 issue (vol. 75, no. 7) can be accessed at: <http://link.springer.com/journal/11837/75/7/page/1>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Steven E. Naleway, Dhruv Bhat, David Restrepo, Kalpana Katti, and Ling Li are Guest Editors for the TMS Biomaterials Committee and organized the topic “Biological Translation: Biological Materials Science and Bioinspired Design” in the July 2023 issue of *JOM*.

(Received April 27, 2023; accepted April 28, 2023;
published online May 30, 2023)