EARLY CAREER SCHOLARS 2022

JMR early career scholars in materials science annual issue

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Published online: 6 January 2022

Introduction

We are pleased to publish the seventh Early Career Scholars in Materials Science annual issue of *Journal of Materials Research*. The issue highlights young scientists carrying out research in the field of materials. By publishing these papers together, we spotlight this group of early career scholars at a particularly important stage in their careers. Their photos and biographical details are included to personalize the authors and to help other scientists identify them, and thus facilitate networking. To further extend that exposure, we have published their papers on an Open Access basis. It is impressive to see the degree of international representation of the scholars, and the efforts taken by this group to carry out state-of-the-art research on a global scale.

The topical coverage represented by the 28 papers in this issue completely overlaps with the scope of topics published in *JMR* and parallels the diversity of subjects represented by the Materials Research Society. There are 4 review articles, 4 invited feature papers, and 4 invited submissions. Central to most of the papers is a perspective on processing nanostructure–property relations—a central theme in materials research.

The polymer-based and soft materials emphasize predicting and directing polymer behavior, ultraviolet protective films, and biomedical wound-healing and bioprinting for tissue engineering. Three papers describe state-of-the-art computational design of 2D materials by chemical vapor deposition (CVD), high entropy oxides by pulsed laser deposition, and magnetron sputtering and CVD of rare-earth doped silicon thin films. Metal-oriented papers cover a breadth of topics related to novel metals such as high entropy ferritic steels, nanocrystalline aluminum

alloys, and copper-based shape memory alloys. Atomistic simulations and in situ measurements lead to deeper insights about silver–copper–tin alloys and precipitation in high-temperature, ultrafine-precipitate strengthened steel, respectively. Additive manufacturing (AM) papers explain laser bed fusion of ceramic–metal composites, and ultrasonic AM of Zr plates and nanocrystalline laminates. The last section of the focus issue covers core–shell-based supercapacitors and polyacrylonitrile-based flexible supercapacitors, respectively. Surface-property-related applications are presented concerning salt rejection on graphene oxide foams, in situ probing of interfacial properties for electrochemical energy storage, hydrocarbon adsorption and liquified natural gas separation, and humidity sensing with tin-doped nickel-oxide nanoparticles. New antiferroelectric and ferroelectrics are predicted in the A_2BX_3 family of compositions, and transport in borospherene-based molecular wires is explored for rectification applications.

These Early Career Scholars are a diverse group of women and men currently residing in nine countries and many have spent time at labs and universities outside their home countries. More than 50% of the scholars hold academic positions. We are enthusiastic to see how the careers of this group of young professionals advance in the coming years. We expect they will continue to grow and prosper in the field of materials and assume future leadership roles. Feel free to contact the editors (jmr@mrs.org) if you have any questions about publishing a paper in a future Early Career Scholars in Materials Science annual issue. Enjoy meeting the 2022 Early Career Scholars and reading their outstanding papers!