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ULTRAFINEGRAINED MATERIALS

Preface to the special issue on ultrafine-grained materials

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This issue is the fifth in a series of special issues on ultrafine-grained (UFG) materials to be published in the Journal of Materials Science. The scientific studies collected here represent selected papers from the Eighth International Symposium on Ultrafine-Grained Materials (UFG VIII), which was held in San Diego, CA, USA from February 16–20, 2014. The eighth UFG symposium was one of the largest symposia at the 2014 TMS Annual Meeting and Exhibition and consisted of 158 abstracts from 20 countries.

Previous collections of UFG papers were published in issues **43**(23–24), **45**(17), **47**(22), and **48**(13).

The eighth international symposium aimed to examine all aspects of science and technology of UFG and nanocrystalline (NC) materials. This symposium covered a broad scope, ranging from fundamental science to applications of bulk UFG (grain size <1000 nm) and NC (grain size <100 nm) materials. The symposium provided a forum for a range of topics including fundamental deformation phenomena, severe plastic deformation studies (primarily high-pressure torsion and equal-channel angular pressing approaches), emerging severe plastic deformation methods, roll-processing methods (such as accumulative roll bonding and differential speed rolling), powder processing and compaction, thermal stability and applications of UFG materials. UFG VIII introduced some emerging important areas of study that focus on surface nanostructuring, and gradient and layered nanostructures, and we expect this subfield to receive tremendously increased interest in the near future.

The papers selected for this issue are representative of the ever-expanding breadth of interests of the UFG/NC materials community, and point to new and exciting scientific opportunities. In your reading of these papers, we hope you too will also see the bright future for UFG/NC materials and appreciate that they have the potential to

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enable transformational changes in manufacturing benefiting society at large.

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