ADVANCES AND CHALLENGES IN CARBON-BASED TRIBOMATERIALS

This special issue of the Journal of Materials Research contains articles that were accepted in response to an invitation for manuscripts.

Introduction

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Carbon-based materials have captured broad interest in the materials science community for decades. Carbon-based systems comprise an impressively broad and continually expanding range of materials, from the building blocks of biology to carbon allotropes with extreme and exotic properties such as nanotubes, buckyballs, graphene, and diamondoids.

This *Journal of Materials Research* (*JMR*) Focus Issue highlights the current understanding and remaining challenges for evaluating the potential of carbon-based materials for tribological systems. The most recent findings in the synthesis, characterization, and application of carbon-based materials are considered, as well as future possibilities for new carbon-based tribological coatings.

The papers included here will inform colleagues in industry and academia about methods, analysis, design advances, and new materials concerning all kinds of carbon-based materials with improved tribological properties or systems, from fundamental research to applied uses, with resulting benefits of longer product/component life, less energy consumption, and reduction in product development time and cost.

As guest editors, we hope that the papers in this special issue will serve as a valuable reference in the field of carbon-based tribomaterials for researchers and tribologists around the globe. We are grateful to the editors and reviewers who worked very hard in reviewing papers and providing feedback for authors.

ON THE COVER:

The cover of this Focus Issue shows a micrograph image of a crater, where the substrate of diamond-like carbon coatings was exposed and some cracks occurred due to the high load after 100,000 cycles of repetitive impact. The image was taken from the Guest Editor (M.F.B. Abdollah)'s work during his Ph.D study at Nagoya University, Japan, from 2009–2011.

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