Special Issue

Self-Healing Polymers for Advanced Battery Applications

Message from the Guest Editors

In recent years, self-healing polymers have demonstrated revolutionary potential in the field of key battery materials due to their unique self-repairing properties and dynamic reversible chemical bond mechanisms. This Special Issue focuses on the design strategies, performance characterization, and engineering application breakthroughs of self-healing polymers in batteries. The key areas of interest include (but are not limited to): (1) molecular structure design of self-healing materials for electrode/electrolyte interfaces, (2) development of self-healing binders and solid-state electrolytes with high ionic conductivity and (3) integration applications in lithium metal anodes, silicon-based electrodes, and flexible batteries. This Special Issue aims to systematically elucidate the core contributions of self-healing polymers in enhancing battery safety, cycle life, and energy density. We sincerely invite experts from both academia and industry to submit original research articles, reviews, and forward-looking opinion papers to jointly advance this interdisciplinary field from mechanistic exploration to commercial application.

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Message from the Editor-in-Chief

Since its foundation in 2009, *Polymers* has developed into an internationally renowned, extremely successful open access journal. The editorial team and the editorial board dedicatedly combine open-access publishing and high-quality rigorous peer reviewing. The performance of the journal has proven this strategy to be well-suited and highly successful. This is reflected in the increasing impact factor of *Polymers*, the most recent one being 4.7.

I would like to invite you to contribute to the success of the journal by sending us your high quality research papers. We would be pleased to welcome you as one of our authors.

Editor-in-Chief

Prof. Dr. Alexander Böker
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