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Chirality Applied in Spintronics, Ferroics and Light–Matter Interactions

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Message from the Guest Editors

Dear Colleagues,

Chirality is a property of symmetry that manifests across multiple length scales and throughout the natural world. Considerations of chirality are embedded into spintronics, ferroics (ferroelectrics, ferromagnets, etc.) and light–matter interactions. Understanding and controlling chiral properties in these research areas remain of high academic importance for investigating and exploiting novel materials. This will undoubtedly lead to breakthroughs that pave the way for new applications across many sectors, including molecular spintronics, memory devices, topological orbital texture, neuromorphic computing, next-generation displays and biosensing.

Spin–orbit interaction refers to the interplay between the polarizational (spin) and spatial (orbital) degrees of freedom. Depending on the handedness of the chiral materials or structrues, electrons or photons of a certain spin are transmitted more easily in one direction as opposed to the other, due to structural dissymmetry and the resulting spin–orbit coupling. Understanding how interfacial parameters beyond chirality affect the spin-selectivity is critical to study this phenomenon...

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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