Special Issue

Spectroscopy and Imaging of Compton Scattering X-rays

Message from the Guest Editors

An energy spectrum of Compton scattered X-rays probes an electron momentum distribution in a material. The electron momentum distribution reflects the wavefunction in momentum, which is a Fourier transform of wavefunction in real space. Because wavefunction has the same symmetry in both the real space and momentum space, the Compton scattering experiment probes the Fermi surface and/or shape of chemical bonding in momentum space.

Compton scattering experiments have played a role in catching quantum states, where the characteristic properties of material occur, for double perovskite manganite, high-temperature super conductor, dense Kondo materials, and so on.

Recent progress in synchrotron facilities has made it possible to use polarization controlled X-rays. Compton scattering experiments with circularly polarized X-rays, often called magnetic Compton scattering, probe spin resolved quantum states in a material.

Li-ion reaction distribution imaging in real space for commercial Li-ion batteries has been reported by Compton scattering experiments as a novel non-destructive test technique.

This volume will cover recent research on Compton scattering X-ray applications.

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Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

Editor-in-Chief

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