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Spectroscopy and Imaging of Compton Scattering X-rays

Guest Editors:

Prof. Dr. Hiroshi Sakurai

Gunma University, Maebashi,
Japan

Dr. Kosuke Suzuki

Gunma University, Maebashi,
Japan

Deadline for manuscript
submissions:

closed (15 December 2021)

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.



mdpi.com/si/56610

Special Issue



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Editor-in-Chief

Prof. Dr. Alessandra Toncelli

Department of Physics, University
of Pisa, 56126 Pisa, PI, Italy

Message from the Editor-in-Chief

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Contact Us

Crystals Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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