Special Issue

Disorder Engineering in Quantum Materials

Message from the Guest Editor

Disorder in materials is not mere randomness—it is *correlated*, it can be structured, and even *engineered*. Such correlated disorder can dramatically reshape material properties, enabling, for example, resonant transport, metal–insulator transitions, and mobility edges. Experiments across ultracold atoms, superconductors, and photonic systems reveal how controlled imperfections can unlock new quantum behaviors. In complex materials—ferroelectrics, thermoelectrics, photoactive compounds, fast-ion conductors—correlated disorder plays a useful role. *Disorder engineering* is emerging as a powerful tool to design and control functionalities unreachable in perfectly ordered or completely random systems. This Special Issue brings together theory and experiment to explore how disorder defines the next generation of quantum materials. **Topics include (not limited):**

- Disorder in superconductors, ultracold gases, low-dimensional systems
- Interplay of disorder, topology, and correlations
- Photonic, open quantum, and non-Hermitian disorder phenomena
- Nanofabrication and synthesis strategies for functional control

Guest Editor

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Deadline for manuscript submissions

closed (31 March 2026)

Condensed Matter

an Open Access Journal by MDPI

Impact Factor 1.5
CiteScore 2.7

mdpi.com/si/256727

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About the Journal

Message from the Editor-in-Chief

Welcome to *Condensed Matter* (ISSN 2410-3896)! It gives me great pleasure to invite you to publish in the journal. We are looking to build a collection of high quality research articles, supported by a community from across the field of condensed matter physics. In this task, I will be assisted by a highly qualified editorial board. We accept papers on basic research as well as applications, and experimental or theoretical work. Currently the journal is indexed by ESCI (Web of Science) and hope you can consider *Condensed Matter* as an exceptional home for your manuscript.

Editor-in-Chief

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