Special Issue

Low-Dimensional Quantum Materials: Synthesis, Properties, and Potential Applications

Message from the Guest Editors

Reducing the dimensionality of materials can endow them with many new correlation effects, and thus constitutes an innovative way to explore novel quantum states and phenomena, which show great potential for application in next-generation quantum technologies. Recent advances in controlled epitaxial growth, mechanical exfoliation, and chemical solution-phase synthesis have enabled the fabrication of low-dimensional quantum materials in the form of zero-dimensional quantum dots, one-dimensional nanowires, two-dimensional thin films, and heterostructures. The extraordinary properties of low-dimensional quantum materials—including topological quantum states, charge density waves, unconventional superconductivities, magnetic orders, quantum critical phases, excitonic effects, novel band structures, etc.—have the potential to revolutionize quantum technologies.

Guest Editors

Prof. Dr. Yi Zhang

National Laboratory of Solid State Microstructure, School of Physics, Nanjing University, Nanjing 210093, China

Dr. Can Wang

School of Physics and Electonic Science, Changsha University of Science and Technology, Changsha 410114, China

Deadline for manuscript submissions

20 February 2026

Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.5

mdpi.com/si/244156

Applied Sciences
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
applsci@mdpi.com

mdpi.com/journal/applsci

Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.5

mdpi.com/journal/applsci

MDPI

About the Journal

Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), Ei Compendex, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q2 (Engineering, Multidisciplinary) / CiteScore - Q1 (General Engineering)