

Special Issue

Mathematical Modeling in Gel Design and Applications

Message from the Guest Editors

Focusing on the critical role of mathematical modeling, this issue seeks contributions that develop models to predict design parameters that are crucial for the development of gels with specific properties according to application requirements. By reducing the experimental effort, these models not only save time and cost but also promote more sustainable research practices. Understanding the gelation process is crucial for the design of gels. Mathematical modeling plays a crucial role here as it enables the prediction of key design parameters such as cross-link density, shear modulus, mesh size, drug diffusion coefficient, viscosity and critical stress. By accurately modeling these aspects, we can more efficiently develop gels with specific properties that match the desired properties according to the application requirements. Papers dealing with the mathematical modeling of gel network formation during the gelation process are very welcome in this Special Issue. Research into the interactions between polymer chains, swelling/shrinkage behavior and rheological properties to enrich the mathematical models is also particularly appealing.

Guest Editors

Dr. Tilen Kopač
Dr. Rok Ambrožič
Dr. Filippo Rossi

Deadline for manuscript submissions

closed (31 May 2025)



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

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About the Journal

Message from the Editorial Board

Gels (ISSN 2310-2861) is recently established international, open access journal on physical and chemical gel-based materials. The journal aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. General topics include but not limited to synthesis, characterization and applications of new organogels, hydrogels and ionic gels made either from low molecular weight compounds or polymers, composite and hybrid materials where a metal is by some means incorporated into the gel network, and computational studies of these materials in order to provide a better understanding of gelation mechanism. We cordially invite you to consider publishing with us and contribute with your own grain of sand to the advance in this fascinating field.

Editors-in-Chief

Prof. Dr. Esmail Jabbari

Biomimetic Materials and Tissue Engineering Laboratory, Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208, USA

Prof. Dr. Chuanliang Feng

State Key Lab of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

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