



DISIT

DIPARTIMENTO DI SCIENZE E INNOVAZIONE TECNOLOGICA

SEMINARI RICERCA E FORMAZIONE

Giovedì 18 Settembre 2025

ore 10:00-12:00

Aula 204

SEMINARIO/CORSO APERTO A:

Docenti | Teachers, Borsisti |
Research Fellows, Assegnisti |
Postdoctoral researchers, Dottorandi
| PhD students, Studenti | Students,
Esterni UNIUPO | external UNIUPO
people

SEMINARIO/CORSO IN LINGUA:

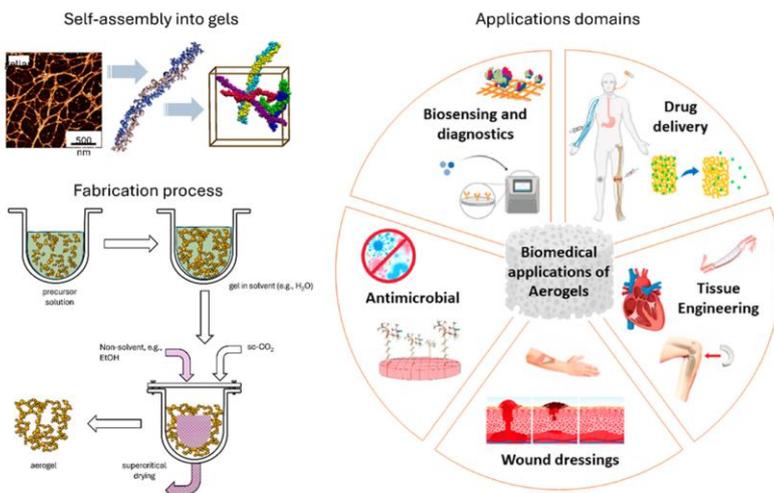
Inglese | English

From Nature to Nano: Biopolymer-Based Aerogels for a Sustainable Future

[Prof. Pavel Gurikov](#)

Hamburg University of Technology, Germany

Biopolymer-based aerogels represent a unique class of materials that merge the structural elegance of nature with the advanced functionality of nanostructured solids. Derived from renewable resources such as polysaccharides, proteins, and lignin, these lightweight, porous materials offer exceptional potential across sectors—from thermal insulation and lightweight construction to pharmaceuticals, food, and cosmetics. In this talk, I will provide a comprehensive overview of the current state and future prospects of biopolymer aerogels. Emphasis will be placed on material design strategies, structure-property relationships, and sustainable processing methods such as solvent exchange and supercritical drying. Key examples will include aerogels from cellulose, alginate, agar, and protein sources, highlighting both the scientific challenges and industrial applications. Special attention will be given to recent advances in controlling gel network structure and drying kinetics, as well as hybridization approaches that combine natural and synthetic components for tailored performance. The talk will also address the critical question of scalability and how these bio-based materials can realistically contribute to circular economy goals and climate-neutral technologies.



BIOGRAPHY

Prof. Dr. Gurikov is a chemical engineer and researcher, currently serving as a Junior Professor and Head of the Nanoporous Materials research group at the Hamburg University of Technology (TUHH).

He co-founded two companies (aerogel-it and Aerogellex) which work on sustainable aerogel manufacturing and supercritical drying technologies, respectively. An active educator, prolific author, and international collaborator.

