

Partner Search Form
Horizon Europe
Health



Date

Deadline

CONTACT

Organisation	Institute of Macromolecular Chemistry, Czech Academy of Science	Department	Biomaterials and Bioanalogous systems
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Organisation type

Research organisation type	☒ Research Organisation	Is your company a Small and Medium Sized Enterprise (SME*)?	☒ YES ☐ NO
	☐ University		
	☐ Company		
	☐ Other		
		Number of employees: 220	

Your enterprise is an SME if:

- it is engaged in **economic activity**
- it has **less than 250 employees**
- it has either an **annual turnover not exceeding €50M**, or an **balance sheet total not exceeding €43M**
- it is **autonomous**

For the definition of SMEs, look at: http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en

Short introduction of key areas of institute's research:

The Institute of Macromolecular Chemistry (IMC) of the Czech Academy of Sciences is a premier European research center for polymer science based in Prague. The IMC features world-class, fully equipped facilities for advanced polymer synthesis, modification, and high-resolution characterization. The IMC has a legendary legacy in biomedical hydrogels. Professor Otto Wichterle invented soft contact lenses here, and the IMC is also the pioneer behind HemaGel®, a globally successful polymer-based wound healing technology, and its latest advanced iterations, such as HemaCut® SPRAY. Building upon this strong translational heritage, our current research focuses on precision macromolecular design, biocompatible hydrogel engineering, smart drug delivery systems, and functional matrices for 3D biofabrication and regenerative medicine. The IMC has a proven track record in international research consortia and technology transfer, effectively bridging the gap between fundamental polymer chemistry and clinical application.

Former participation in an FP European project?

☒ YES ☐ NO

Project title / Acronym:

Activities performed:

H2020-MSCA-RISE-2018 Nanopol - Soft Biocompatible Polymeric Nanostructures: A Toolbox for Novel Generation of Nano Pharmaceuticals in Ophthalmology
H2020-JTI-FCH-2019-1, Next generation alkaline membrane water electrolyzers with improved components and materials NEWELY
Horizon 2020 -H2020-NMP-11-2015, Scaling up biodegradable biodegradable nanomedicines for multimodal precision cancer immunotherapy
HORIZON-MSCA-2025-PF-01-01, Solar energy Harvesting via Intelligent Nanosuspension Electroactive electrolytes (začíná 8/2026)

Expertise / Commitment offered

Description of your expertise:

Precision Macromolecular Design & Functional Bioinks for Regenerative Medicine

Advanced Polymer Synthesis & Tailored Modification: High-level expertise in the precision synthesis, functionalization, and comprehensive characterization of both natural and biodegradable synthetic polymer platforms. This includes gelatin, hyaluronic acid, tailorable poly(amino acid)s, and elastomeric poly(glycerol sebacate) (PGS).

Next-Generation 'Stealth' Biomaterials: Advanced capabilities in synthesizing high-molecular-weight polysarcosine (pSar) as a highly biocompatible, non-immunogenic, and biodegradable alternative to traditional PEGylation.

Smart Hydrogel Engineering & Advanced Crosslinking: Development and processing of cell-friendly hydrogel, microgel, and nanogel networks. We specialize in precise matrix crosslinking via enzymatic or safe visible-light photo-gelation (e.g., riboflavin chemistry) utilizing methacryloyl or tyramine functional groups to achieve tunable mechanical and degradation kinetics.

Multi-Platform 3D Biofabrication: Proven track record in optimizing rheological behavior and shear-thinning properties for high-cell-density extrusion-based bioprinting on the **Cellink BIO X**, as well as high-resolution stereolithography (SLA) 3D printing of poly(glycerol sebacate) matrices.

In vitro Pre-Clinical Validation & Biocompatibility: Comprehensive in-house capability for conducting rigorous biodegradation studies and standardized biological evaluation of newly developed bioinks and printed scaffolds in strict accordance with ISO 10993 standards.

Keywords specifying your expertise:

Regenerative Medicine; Tissue Engineering; Polymers; Macromolecular Design; Biomaterials; Smart Hydrogels; Biofabrication; 3D Bioprinting; Functional Bioinks; In-situ forming; Injectable; Biomimetic; peptides; mesenchymal stem cells, cartilage, bone.

Commitment offered:

☒ Research ☐ Demonstration ☒ Training
☐ Technology ☐ Dissemination ☐ Other:

Interested in

☒ Research & Innovation ☒ Innovation Action ☐ EIC

participation in
project types:

Action

Pathfinder

Work Programme research areas: indicate your interest

Horizon Europe,

Call topic(s): HORIZON-HLTH-2027-03-TOOL-02: Advancing Bio-Printing of Living Cells for Regenerative Medicine.
HORIZON-MISS-2027-02-CANCER-01: Leveraging functional genomics to reveal novel targets for cancer treatment

Do you have other
partners for this
topic (which
partners/country)?

No

Profile of partner sought

Role

☒ technology development

☒ research

☒ training

☐ dissemination

☐ demonstration

☐ other _____

Country /region

☐

Expertise required

Clinical Translation & Medical Expertise: Clinical research centers, medical universities, or clinicians specializing in regenerative medicine, plastic surgery, or transplantation, capable of defining clinical requirements and guiding the translational pathway.
In Vivo & Pre-Clinical Evaluation: Partners with established facilities for advanced animal models, in vivo biocompatibility testing, and organ-graft transplant models to evaluate 3D-printed constructs.
Hardware Design & Micro-Surgical Instrumentation: Engineering partners or companies focused on the development of specialized bioprinter hardware, novel extrusion nozzles, or micro-surgical/endoscopic delivery devices for in-situ bioprinting applications.
Advanced Cell Biology & Tissue Culture: Laboratories with deep expertise in human mesenchymal stem cells (hMSCs), induced pluripotent stem cells (iPSCs), multi-cellular co-culture systems, and advanced bioreactor cultivation.
Computational Modeling & Digital Twin: Academic or industrial partners specializing in the predictive modeling of bioink fluid dynamics, mechanical scaffold behavior, or cellular proliferation kinetics within 3D matrices.

I agree with the publication of my contact data:

☒ YES

☐ NO