

Health-care Alloys: Responsive, Multifunctional and ON-demand Implants (HARMONI)



Una Europa Seed Funding Call 2025

Abstract

Novel biomaterials, processed using advanced technologies and possessing multifunctional properties, offer exciting new possibilities for next-generation medical devices. Additive manufacturing of biocompatible alloys, followed by surface modification and functionalisation, provides bioengineering solutions tailored to individual patients with complex clinical conditions, enabling the creation of patient-specific implants.

This consortium aims to cover the entire value chain – from biomaterials design and additive manufacturing to surface engineering and in vitro evaluation of both bioresorbable (zinc and magnesium-based alloys) and permanent implant materials (titanium-based and high entropy alloys). The focus is primarily on bone repair and replacement, with the ultimate goal of paving the way for in vivo validation.

The partnership, which brings together complementary expertise and research facilities, is further strengthened by the involvement of medical professionals, including orthopaedic surgeons, hospital CEOs, and medical device suppliers. This multidisciplinary network will generate a lasting ripple effect over time. Through collaborative efforts, the project aims to address age- and genetics-related challenges in the field of orthopaedic implants, leading to the formation of multiple partnerships and the application for European and international funding to tackle specific issues. This approach is expected to create a collective societal impact.



Project Coordinators

Endzhe Matykina

Universidad Complutense de Madrid

ematykin@ucm.es



Jesús Manuel Vega

Universidad Complutense de Madrid

jvega@ucm.es



Participating institutions

Universidad Complutense de Madrid

KU Leuven

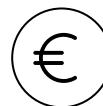
University of Edinburgh

Uniwersytet Jagielloński w Krakowie



Third Parties

TU Delft



Duration

January 2026 – December 2026

Budget

€ 37.150

