

**ABSTRACT - POSTER**

## **PIEZOBIO - 3D/4D printable piezoelectric biomaterials with enhanced biological properties**

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The PIEZOBIO project aims to manufacture biomedical parts with improved piezoelectric properties, using 3D additive technology, to combat bacterial infections. In partnership with CERAMATHS-DMP laboratory (UPHF), CRIBC is looking to provide innovative solutions for medical devices, particularly in the dental and orthopaedic fields.

The common challenge facing the project partnership is the need to respond to the growing threat of bacterial infections, while improving the efficacy and biocompatibility of medical devices.

The overall aim of the project is to develop 3D/4D printable piezoelectric biomedical parts which, when activated by external ultrasound, will offer improved antibacterial properties compared with current medical devices. This should reduce post-operative infections and improve patient outcomes, particularly in dental and orthopaedic surgery.

The main achievements of the project will include the manufacture of customised biomedical parts, the demonstration of their piezoelectric and antibacterial properties, and the dissemination of the results to healthcare professionals and patients. Beneficiaries will include patients undergoing dental and orthopaedic treatment, as well as healthcare professionals who will be able to use these improved devices.

A cross-border approach is necessary because it brings together complementary expertise from both sides of the border, encouraging innovation and the creation of more effective solutions. In addition, it opens up the possibility of sharing results with a wider range of beneficiaries and fostering collaboration between businesses and institutions in the regions concerned.

The original aspects and innovations of the project lie in the use of 3D/4D printable piezoelectric materials to improve the antibacterial properties of medical devices. This approach will enable treatments to be more personalised, reduce the risk of infection and improve the effectiveness of care, while offering advanced technological solutions to today's medical challenges.

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