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## BOOK OF ABSTRACTS



### III3. Bioeconomy and Sustainable Development

#### **P180. BIONANOSCULP: development of chitosan-based coatings as an eco-friendly strategy for conservation of outdoor sculptures**

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Urban outdoor sculptures, which are an immeasurable part of our cultural heritage, are easily vulnerable to chemical and physical alterations due to their exposure to weather elements and air pollution. These alterations are aggravated by the colonization of degrading microorganisms. Nowadays, the products used for biodeterioration control of such cultural objects lack versatility or are toxic to the environment and the human health. In order to find new alternatives based on non-toxic and sustainable materials, the BIONANOSCULP project proposes the development of an antimicrobial protective layer for the preventive conservation of outdoor sculptures. For that, chitosan has been tested as a base biopolymer for the synthesis of protective coatings due to its proven antimicrobial properties. Different concentrations and molecular weights of chitosan, as well as the addition of adjuvants and cross-linking agents were tested to obtain coatings with relevant properties for application on metal and stone sculptures. Antimicrobial activity testing, together with physical and chemical assessments are being performed to characterize and evaluate the suitability of the coatings as protective layers able to slow down the growth of relevant microorganisms. Permeability assays and compatibility of the coatings to stone and metal samples are also being considered in order to analyze their performance on different materials while not causing alterations to the original aesthetics of the sculptures.

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