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10.00 h
Aula del Edificio I+D

Polyoxometalate-Ionic Liquids as biocides to avoid lampenflora growth on stone works of art of the Vranken-Pommery champagne cellar in Reims

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Phototrophic microorganisms such as cyanobacteria and microalgae can proliferate readily in underground heritage sites where the introduction of artificial illumination equipment has significantly altered previously stable environmental conditions. The extended lampenflora biofilm growth on the bas-reliefs carved in the underground Pommery Champagne cellar in Reims (France) represents a recurring biocolonisation problem which requires periodic cleaning. The aim of this work was to limit the growth of lampenflora on chalk substrates using preventative biocidal treatments based on polyoxometalate ionic liquids (POM-ILs). Biocidal POM-IL coatings were more effective than commercial Preventol RI80 against algal strains isolated from the Pommery bas reliefs and were capable of sustained prevention of biofilm growth when applied to wet chalk. Crucially, coating concentration studies demonstrate how POM-IL-coated slabs retain their biocidal activity and can prevent subsequent recolonisation following the re-inoculation of coated slabs with algae and cyanobacteria. Consequently, POM-ILs represent excellent candidates to eliminate lampenflora growth in unique subterranean environments

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