

Stone materials and polymer coatings: new perspectives for the protection of the cultural heritages

Valentina Sabatini,^{1,*} Eleonora Pargoletti,² Hermes Farina¹, Marco Aldo Ortenzi¹, Giuseppe Cappelletti¹

¹Università degli Studi di Milano, Department of Chemistry, via Golgi 19, 20133 Milano, Italy

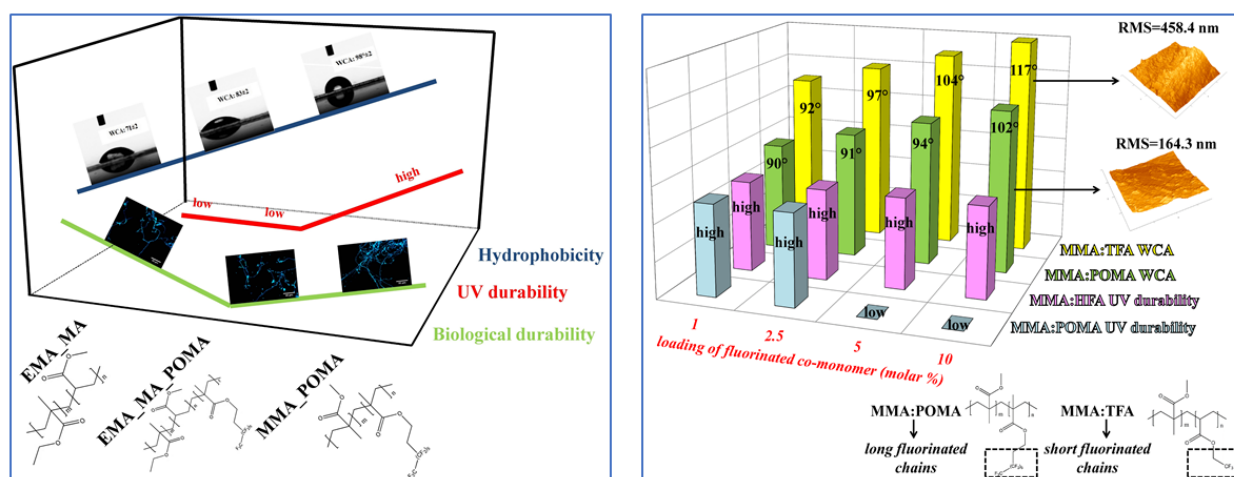
* E-mail: valentina.sabatini@unimi.it

ABSTRACT

Deterioration phenomena of ancient and modern stone cultural heritages are natural and unrestrainable decay processes mainly arising from water adsorption and percolation into stone building materials. Once water attacks and penetrates stone surfaces, several chemical, physical and biological degradation processes can occur altering significantly, and in some cases even irreversibly, the properties of stone materials.

The application of hydrophobic coatings to stone surfaces is mandatory to protect stone artefacts from the deleterious effects occurring in the case of water exposition. The protective agent must possess several features, i.e. high compatibility with the substrate, high durability, transparency, ease of application and removal, water-repellency, capability to avoid the attack of organic and inorganic contaminants; moreover, it should be permeable to water vapor.

The aim of the present work was to present our relevant developments (Figure 1) in the field of new polymer coatings as stone protective with satisfactory water repellent properties and improved durability, thanks to the use of fluorinated and long alkyl chain monomers and without the use of any photo stabilizers [1,2].



V. Sabatini et al. *Progress in Organic Coatings*; DOI: 10.1016/j.porgcoat.2017.10.003.

V. Sabatini et al. *Chemistry Letters*; DOI: 10.1246/cl.171020

Fig. 1: New perspectives in the field of cultural heritages protection.

REFERENCES:

1. V. Sabatini, C. Cattò, G. Cappelletti, S. Antenucci, H. Farina, M.A. Ortenzi, S. Camazzola, G. Di Silvestro, *Progress in Organic Coatings*. **47**, 114 (2017)
2. V. Sabatini, H. Farina, A. Montarsolo, E. Pargoletti, M.A. Ortenzi, G. Cappelletti, *Chemistry Letters*. **3**, 47 (2018)