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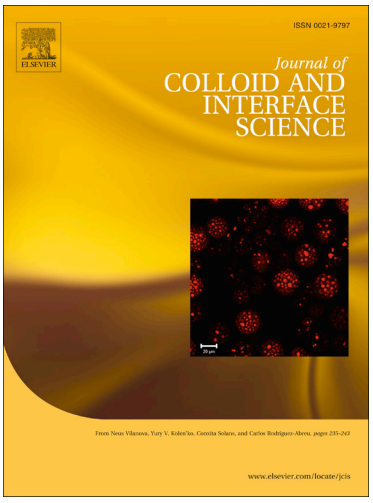

Interfacial self-assembly of functional bilayer templates comprising porphyrin arrays and graphene oxide

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Interfacial self-assembly of functional bilayer templates comprising porphyrin arrays and graphene oxide

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ABSTRACT: Fabricating of solid-supported hybrid nanostructures remains a challenging problem because it is difficult to control all interfacial interactions influencing the structure and stability of these systems. The most widely used approach to solving this problem is a bottom-up assembly on the surface templates such as self-assembled monolayers (SAMs). Herein we suggest an alternative approach to tailoring solid surfaces by a formation of an interlayer anchoring the nanostructured film to the solid substrate. We formed a multifunctional bilayer template (MBT), comprising an adhesive monolayer of graphene oxide and a functional ordered monolayer of metal organic compound (Zinc-tetra(4-pyridyl)porphyrin) directing further bottom-up growth of the nanostructures. The one-step assembly of MBT proceeded spontaneously at the air/water interface and was monitored by an in-situ fiber optic absorption and fluorescence spectroscopy in a Langmuir trough. Dilatation surface rheology was applied to study the evolution of molecular organization of the monolayers upon adding the zinc ions, GO

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