

Preliminary results on the use of Imogolite to extract emerging organic pollutants from water samples

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Mineral nanoparticles and nanominerals are of great scientific interest because of their physical and chemical enhanced properties, like large surface-to-volume ratio, strong mechanical resistance and the presence of quantum effects.

Imogolite is a nanomineral, with the general formula $(\text{OH})_3\text{Al}_2\text{O}_3\text{SiOH}$ and tubular shape, that can be obtained from glassy volcanic ash soils or be synthesized at mild conditions in aqueous solutions. Moreover, different modifications can be applied to the inside and/or the outside of the nanotubes. In nature, imogolite can be found as hollow nanotubes with an outer diameter of 1.9-2.1 nm, an inner diameter of less than 1.2 nm and lengths between several hundred nanometers to one micrometer [1].

These features make Imogolite a great candidate to be used on analytical chemistry field with the purpose to developed novel environmental friendly extraction methods. Preliminary studies have been developed to extract emerging organic pollutants (i.e., parabens) from water samples using imogolite. Solid-phase and liquid-phase extractions have been tested obtaining recoveries higher than 40% for most of the studied compounds. Additionally, preliminary results have shown the presence of Phtalate compounds in imogolite; presumably coming from the plastic bottles where imogolite was synthesized. These tentative results place imogolite as an appealing potential organic pollutant extractant.

[1] Castro et al. (2016) *Nanomaterials*, 6, 28; doi:10.3390/nano6020028.