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Composites of polyamides and nanoparticles for dispersive micro-solid phase extraction

Polymeric materials are widely employed in (micro) extraction techniques due to several advantages such as their stability and versatility. Polyamides, a specific type of polymers, are obtained by the controlled synthesis between a diacid and a diamine compounds yielding a polymeric chain where amide groups are distributed periodically. The chemical forces that allow the chain stacking can also be used for the extraction of target compounds from samples of different nature. In addition, polyamides can be easily synthesized in the lab using several monomers with different moieties that may increase the potential of these polymers as sorbents since the material can be synthesized to boost the interaction with the target compounds. The introduction of nanoparticles inside the polymeric network has been demonstrated as a good way to improve the extraction capacity of the sorbents as well as their mechanical properties. On the one hand, nanoparticles disturb the normal stacking of the polymer increasing their superficial area which results critically to improve both thermodynamics and kinetics aspects of the extraction. On the other hand, the use of special nanoparticles, like magnetic ones, may provide singular properties to the resulting composite. In this communication, the easy synthesis of polyamides-NPs composites, their main advantages and disadvantages will be described in detail to clearly show the potential of this material. This potential, which is supported by practical application of these composites in fields as different as food analysis or bioanalysis, will be explained with suggestions of further research.

Biography

Rafael Lucena Rodriguez is a Professor at the Analytical Chemistry Department of the University of Cordoba since 2010. He has co-authored 80 scientific articles and several chapters mainly on microextraction techniques. He has been Guest Editor in one special issue of *Analytical and Bioanalytical Chemistry* journal devoted to this field. He is the Editor of Microextraction Tech blog. His main research interest comprises different areas, especially the development of new microextraction techniques as well as the evaluation of ionic liquids and nanoparticles in this context. Presently, he is also working on bio-recognition.

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