

Compact and mesoporous organosilica phosphazene-based hybrid nanoparticles

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Silica based nanoparticles are well known inert and therefore biocompatible materials, however, they are not known to show biodegradability, which is an essential requirement for biomedical applications. Polyphosphazenes are polymers consisting of a phosphorous-nitrogen backbone substituted with organic groups, which can be used to tailor the properties of the polymer, such as degradability in an appropriate time frame into non-toxic products and intermediates [1]. Through a combination of both materials we created novel compact organosilica phosphazene-based hybrid compact nanoparticles (see Figure 1) [2]. Furthermore, we attempted to synthesize novel mesoporous silica nanoparticles containing phosphazene moieties, to achieve a faster degradation compared to compact nanoparticles.

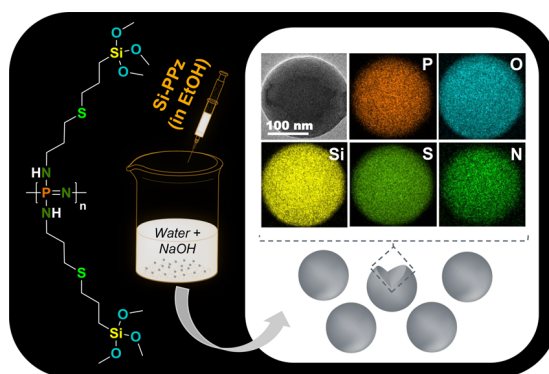


Figure 1: Synthesis of the silica-phosphazene based hybrid nanoparticles and their TEM-EDS elemental mapping analysis [2].

[1] Wilfert S., Iturmendi A., Schoefberger W., Kryeziu K., Heffeter P., Berger W., Brüggemann O., Teasdale I., *J. Polym. Sci. Pol. Chem.*, **2014**, 52, 287-294.

[2] Poscher V., Teasdale I., Salinas Y., *ACS Appl. Nano Mater.*, **2019**, 2, 655-660.