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**Superparamagnetic nanoplatforms for theragnostic applications:
a structural investigation** IRENA MILOSEVIC, LAURENCE MOTTE, CSP-
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60439, USA — Magnetic nanoplatforms are being developed for use in bioassays,
diagnosis, therapy and nano-organocatalysis. The nanoparticle has two essential
roles: to act as a probe owing to its specific magnetic properties and to carry on
its surface antitumoral molecules, precursor groups for the covalent coupling of bi-
ological recognition molecules, or small organic catalysts such as amino acids and
alkaloids. The nanoplatforms consist of a superparamagnetic iron oxide core and
different coatings for surface passivation and stabilization. We report recent results
obtained at the Advanced Photon Source on three kinds of nanoplatforms, differing
in their coating molecules: shape and size determination by small-angle X-ray scat-
tering, distribution of valences and chemical environments of the iron ions deduced
from X-ray absorption near-edge structure measurements, and atomic structures
determined by x-ray diffraction.

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