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## Synthesis and characterization of spider silk coated with maghemite nanoparticles

Spider silk (SS) is a biopolymer that outperforms some of the strongest natural or man-made materials known. Fibers of *Pholcus phalangioides* spider were used as a template for obtaining SS coated with superparamagnetic maghemite nanoparticles ( $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> NPs) –strong composite fiber responsible in a magnetic field. The material was synthesized by one-pot precipitation technique. X-ray diffraction analysis of the sample confirmed the presence of maghemite nanocrystalline phase, and EDS measurements confirmed the presence of iron oxide in the composite. From SEM and it could be seen that the SS fibers were completely and homogeneously covered with  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> NPs and we used HRTEM to estimate size of maghemite NPs. SQUID analysis were used to describe magnetic properties of the obtained composite.

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