

Ni/Ni oxides nanoparticles with potential biomedical applications obtained by displacement of a nickel-organometallic complex

Rodríguez-Llamazares, Saddys

Merchán, Juan

Olmedo, Ivonne

Marambio, Héctor Pablo

Muñoz, Juan Pablo

Jara, Paul

Sturm, Juan Carlos

Chornik, Boris

Peña, Octavio

Yutronic, Nicolás

Kogan, Marcelo Javier

A new synthesis and stabilization method was developed for paramagnetic nanoparticles composed of nickel and nickel oxides. Nickel/nickel oxides nanoparticles were synthesized by a method based on ligand displacement of bis(1,5-cyclooctadiene)-nickel(0), zerovalent organometallic precursor and simultaneous formation of a thiourea inclusion compound. Nickel/nickel oxides nanoparticles were stabilized with the amphipathic peptide H₂N-Cys-Leu-Pro-Phe-Phe-Asp-NH₂ having H₂N-Leu-Pro-Phe-Phe-Asp-NH₂ a peptide with potential properties for Alzheimer's disease therapy. The inclusion compound formed after displacement was characterized by X-ray powder diffraction, and nickel/nickel oxides nanoparticles were characterized using transmission electron microscopy, atomic force microscopy, UV-Visible spectroscopy, X-ray photoelectron spectroscopy, and superconducting quantum interference device magnetometry. In addition, a cell viability assay in primary rat hippocampal neurons was carried out