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Direct enantioenrichment of DL-mandelic acid by *in situ* immobilization of a general resolving agent on the magnetic multi wall carbon nanotube

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L-threonine (L-thr) as a general chiral selector anchored on the surface of magnetic multi wall carbon nanotube (MMWCNT) was prepared using an *in situ* electrostatic adsorption and studied as a new magnetically chiral selector for the separation of chiral DL-mandelic acid (DL-MA) as a model sample. By varying the pH, DL-MA was adsorbed on the surface of magnetic chiral selector through hydrogen bonds. It was recognized that MMWCNT with chiral ligands on its surface simultaneously possessed both magnetic property and direct chiral recognition ability. The successful immobilization of L-thr onto the surface of MMWCNT was confirmed by infrared spectra (FT-IR), X-ray diffraction patterns (XRD) and transmission electon microscopy (TEM). The FT-IR and mass spectra of supernatant and elution solutions also confirmed the immobilization of L-thr onto the surface of MMWCNT. The analysis results of specific rotation, HPLC and ultraviolet-visible spectroscopy revealed that the L-thr-MMWCNT showed stronger complexation of (+)-enantiomer than (-)-enantiomer. The functional magnetic nanotubes were easily separated from the racemic solution using an external magnetic field which demonstrated its feasibility of recycling the adsorbent. All processes including *in situ* immobilization, enantioseparation (enantioenrichment) and magnetic separation were done by single process in a short time (only 10 min).

Biography

Ghazale Daneshvar Tarigh has completed her PhD in Analytical Chemistry from University of Tehran, Iran in 2015, BSc in Pure Chemistry at the University of Zanjan in 2003 and MSc under the direction of Prof. Yadollah Yamini at TMU and Prof. Ali Jabbari at KNTU in 2009. Her field of interest is the development of new extraction technologies with an emphasis on miniaturized sample preparation methods and separation techniques.

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