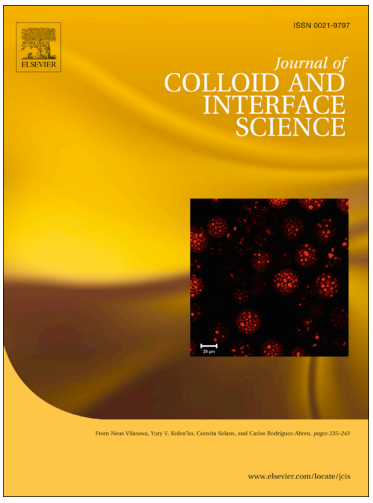

Short Communication

Facile synthesis and characterization of a novel silica-molybdenum disulfide hybrid material

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Facile synthesis and characterization of a novel silica-molybdenum disulfide hybrid material

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Abstract:

To improve the dispersion of MoS_2 in polymer matrix, a facile synthesis approach was developed in this study through a synergetic effect between two kinds of nanofillers with different dimensionality. The nanohybrids based on two dimensional (2D) MoS_2 and 0D silica nanospheres were fabricated by in situ growth method without any surfactants. Characterizations of the hybrid materials were done by X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), Solid-state ^{29}Si nuclear magnetic resonance (NMR) spectra, transmission electron micrographs (TEM) and scanning electron microscopy (SEM). The TEM and SEM results demonstrated that the dispersibility of MoS_2 was greatly improved and the agglomeration was suppressed, with the introduction of silica nanospheres.

Keywords: Molybdenum disulfide, Silica, Nanohybrids, Polymer nanocomposites, Dispersion