

عنوان مقاله:

In Situ Polymerization of Polyaniline in Silane Modified Calcium Based Layered Double Hydroxide Intercalated Tartrate

محل انتشار:

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خلاصه مقاله:

In the present study, the goal was the synthesis, characterization, surface morphology and thermal properties of organic-inorganic hybrid material of polyaniline/Ca-Fe layered double hydroxide nanocomposites (Ca/Fe-LDH /PANI NCs). At first, Ca/Fe-LDH with intercalate bio-safe tartrate anion (TA-Ca/Fe-LDH) was prepared via the co-precipitation and hydrothermal method. The surface of as-synthesized TA-Ca/Fe/LDH was successfully modified by 3-aminopropyltriethoxysilane coupling agents. Then, polymer matrix nanocomposites (PMNCs) were fabricated by in situ polymerization of aniline in the presence of different amounts of modified LDH. The as-prepared PMNCs were characterized by X-ray diffraction, Fourier transform infrared, transmission electron microscopy, field emission scanning electron microscopy, and thermogravimetric analysis (TGA) techniques. The results of morphological studies showed the morphological structure similar to the lamellar structure and plate-like shape particles. According to the TEM results, the sizes of the particle were reduced less than 33 nm. According to TGA results, the thermal stability of polyaniline was improved by adding modified LDH. Also by increasing silane modified LDH contents in the final NCs, the char yields at 700 °C were improved.

کلمات کلیدی:

Calcium based layered double hydroxide, Anionic clays, Polyaniline, Nanocomposites

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