عنوان مقاله:

A new structure of multiwall carbon nanotube/Alumina nanohybrid with high toughness and surface area

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

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خلاصه مقاله:

This paper describes a new class of alumina composites based on a hybrid microstructure design,in which multiwall carbon nanotubes (MWNTs) and Alumina nanoparticles are combined to give a new type of ceramic nanocomposite for catalyst support in our future research.Alumina nanoparticles were positioned directly on functionalized multiwall carbon nanotubes (MWNTs) by a modified sol–gel method. The structure and nature of the resulting MWNTs/alumina nanohybrid were characterized by Transmission Electron Microscopy (TEM), X-ray diffraction (XRD), BET, toughness test. The results showed that alumina nanopartices were homogeneously dispersed and well separated from one another on the modified MWNTs surfaces. This design provides mutually redundant mechanisms to enhance the strength and toughness of the alumina matrix without deteriorating its intrinsic properties such as hardness. The alumina nanohybrid with different MWNTs contents (0, 1, 2, 3 and 5 wt %) were prepared. The specific surface area and toughness of 3 wt% MWNTs/Alumina nanohybrid were nearly 1.2 and 1.88 times of alumina respectively.

کلمات کلیدی:

carbon nanotubes,functionalization,hybrid,toughness,alumina

لینک ثابت مقاله در پایگاه سیویلیکا: