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Influence of the ultrasound-assisted synthesis of Cu–BTC metal–organic frameworks nanoparticles on uptake and release properties of rifampicin

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Abstract

In this work, we study uptake and release properties of rifampicin (denoted henceforth as **Rif**) from ultrasound-assisted synthesis Cu–BTC nanoparticles in comparison with bulk Cu–BTC and activated carbon. To explore the absorption ability of the Cu–BTC to **Rif**, fresh sample of Cu–BTC was immersed in an aqueous solution of **Rif** and were monitored in real time with UV/vis spectroscopy. Results show that the adsorbed quantity of **Rif** over nano Cu–BTC (denoted henceforth as **I**) is much higher than those over a bulk Cu–BTC (denoted henceforth as **II**) and activated carbon. In compound **I** and all of the nano–MOFs the channel length is decreased so that the amount of adsorption is increased a little. The samples were characterized with X-ray powder diffraction (XRD), Scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FT–IR), and UV/vis spectroscopy.

Keywords: Rifampicin; Nano; Porous; Metal–organic frameworks.

1. Introduction

The field of metal–organic frameworks (MOFs), which are also called porous