

## عنوان مقاله:

Influence of Nanoparticles on Liquid-Liquid Micro-Extraction Process: a Review

## محل انتشار:

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## خلاصه مقاله:

Liquid-liquid extraction is an important operation with considerable applications in petrochemical, waste water treatment, hydrometallurgical, oil refining and pharmaceutical industries. Growing attention has been recently paid to transport phenomena in micro-extraction devices. The aim of this paper is to summarize the literature on the influence of nanoparticles on the liquid-liquid micro-extraction processes. In this review paper, published articles, type of nanofluids used, concentration of nanoparticles, maximum observed mass transfer enhancement, dominant mass transport mechanisms and future aspects of liquid-liquid microextraction at the presence of nanoparticles are summarized. This survey shows employing magnetic nanoparticles is very attractive, since they provide the possibility of mass transfer manipulating and particles separation at the end of the process using a magnetic field. In most reported works, only the influence of nanoparticles concentration on the mass transfer has been investigated experimentally. Type, size, shape, surface morphology and chemical nature of nanoparticles and modeling of mass transport in nanofluids could be the focus of future studies.

## کلمات کلیدی:

Nanoparticle, Nanofluid, Liquid-liquid extraction, Micro-extraction, Mass transfer

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