

## عنوان مقاله:

Chemically deposited sol-gel films on porous TiO<sub>2</sub> nanotube arrays as an unbreakable solid phase microextraction fiber

## محل انتشار:

سومین همایش ملی انرژی، محیط زیست، کشاورزی و توسعه پایدار (سال: 1395)

تعداد صفحات اصل مقاله: 17

## نویسندگان:

Sirwan Mohammadiazar - *Young Researchers and Elite Club, Science and Research Branch, Islamic Azad University, Tehran, Iran*

Parviz Aberoomand Azar - *Department of Chemistry, Science and Research Branch, Islamic Azad University, Tehran, Iran*

.Manoochehr Farjaminezhad - *Department of Chemistry, Ardabil Branch, Islamic Azad University, Ardabil, Iran*

## خلاصه مقاله:

In the present study a novel technique was proposed to improve the performance of solid phase microextraction fibers by chemical deposition of polydimethylsiloxane film on modified TiO<sub>2</sub> nanotube array substrate. Two different techniques, the self-assembled monolayer of 3-mercaptopropyl trimethoxysilane and NaOH treatment, were compared to modify the surface of substrates. The best results were obtained with the fiber modified by NaOH 10 M. The morphology of the prepared fibers was studied by scanning electron microscopy. Also, thermal stability experiments demonstrated that the novel fiber was very stable at the temperature of 280 °C and it could be used for more than 80 times without obvious decrease in the extraction performance. The novel fiber was used for the headspace solid-phase microextraction of some aromatic hydrocarbons as the model coupled with GC-MS. The results showed that optimized extraction temperature, time and salt content were 30 °C, 20 min and 25% (w/v), respectively. Finally, extraction performance of the prepared fiber was compared with commercially available fibers and previously reported similar fiber. The proposed method was successfully applied for determination of polycyclic aromatic hydrocarbons in river water samples with good relative recoveries from 75.8 to 104.5% and the relative standard deviation values for all analytes were below 12%

## کلمات کلیدی:

polycyclic aromatic hydrocarbons; Sol-gel; Solid phase microextraction; TiO<sub>2</sub> nanotube array

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/719073>

