

# ADSORBENT FOR REMOVAL OF HEAVY METALS FROM WATER



## INVENTION

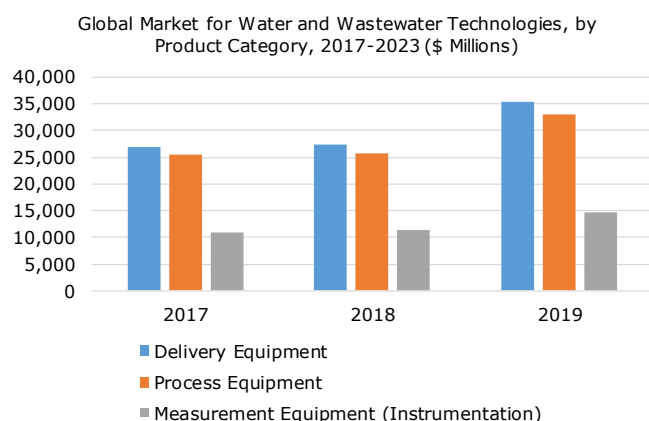
An adsorbent was prepared from functionalized asphaltenes (extracted from crude oil) and used for removal of heavy metals and metals from water.

## MARKET SIZE AND GROWTH

According to a report on "Water and Wastewater Treatment Technologies: Global Markets" by BCC Research (2018), the global water and wastewater treatment technologies market is anticipated to grow from \$64.4 billion in 2018 to \$83.0 billion by 2023 with a CAGR of 5.2% during the forecast period.

The market is segmented into three categories, Delivery Equipment (pipes, fittings, valves controls, etc.), Process Equipment (regular and advanced wastewater treatment equipment) Instrumentation (Activated Sludge, Anaerobic Digestion, Nutrient Removal, etc.).

The market size and growth forecast of these three segments is shown in the following figure.



## APPLICATION

Treatment of Industrial wastewater.

## PROJECT STATUS

It was tested in lab and results showed that adsorption efficiency for removal of chromium and lead was excellent. The adsorbent was able to remove about 70wt% of contaminants in two hours and about 90wt% of contaminants in four hours. The desorption capacity was also good and adsorbent was able to maintain adsorption capacity for five cycles.

## ADVANTAGES

- Prepared with low cost material (asphaltenes)
- Good removal efficiency for Lead and Chromium ions from water
- Good efficiency in Desorption

## LOOKING FOR DEVELOPMENT PARTNER

KFUPM is interested in seeking market feedback from industry, licensing the technology to a company to commercialize it and/or partner with a company for further development of this technology.

## PATENT PROTECTION

The invention is protected through US patent application 15/945302 that was filed on Apr 04, 2018 and covers the adsorbent composition, and method of preparing and using adsorbent. The IP is owned by King Fahd University of Petroleum & Minerals (KFUPM).

## ABOUT KFUPM

KFUPM was established in year 1963 and is located in Dhahran city of Saudi Arabia. KFUPM currently ranks at 186 in QS World University Rankings 2021. KFUPM's Innovation & Technology Transfer office strives for taking innovation from lab to market place.

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