

## عنوان مقاله:

Adsorption potential of silica gel and activated alumina at different humidities: An experimental and modelling study

## محل انتشار:

پنجمین کنفرانس علوم و مهندسی جداسازی (سال: 1401)

تعداد صفحات اصل مقاله: 6

## نویسندگان:

Reza Sadeghi - *Department of Petroleum Engineering, Faculty of Petroleum, Gas, and Petrochemical Engineering, Persian Gulf University, Bushehr, Iran*

Shahriar Osfouri - *Department of Chemical Engineering, Faculty of Petroleum, Gas, and Petrochemical Engineering, Persian Gulf University, Bushehr, Iran*

Reza Azin - *Department of Petroleum Engineering, Faculty of Petroleum, Gas, and Petrochemical Engineering, Persian Gulf University, Bushehr, Iran*

Parviz Zahedizadeh - *Department of Petroleum Engineering, Faculty of Petroleum, Gas, and Petrochemical Engineering, Persian Gulf University, Bushehr, Iran*

## خلاصه مقاله:

In this study, humidity adsorption capacity (HAC) activated alumina and silica gel were investigated. Adsorption experiments were performed at temperatures of ۳۰۳.۱۵ K and ۳۱۳.۱۵ Kelvin and ۵ different humidity. The humidity box was designed and built for testing. The results showed that the adsorption rate of silica gel in all humidities ranges is higher than that of activated alumina. In ۳۰% humidity, the HAC of silica gel is ۵% higher than that of activated alumina. In the humidity range of ۳۰ to ۸۵%, the HAC of silica gel is ۱۴% higher than that of activated alumina. In humidity above ۸۵%, the HAC of activated alumina is close to that of silica gel, while in a humidity content of ۹۹%, the HAC of silica gel is only ۴% higher than that of activated alumina. In addition, with increasing temperature, the HAC of silica gel remained constant in all humidities, but the HAC of activated alumina in a humidity of ۹۹% increased by ۲%. In this study, five adsorption isotherm models were used to model the data obtained in the laboratory. From the results of all models, concluded that Langmuir and Dubinin-Radushkovic models are suitable for silica gel and the Harkin-Jura model is suitable for activated alumina.

## کلمات کلیدی:

Adsorption; Humidity; Silica gel; Activated alumina; Modeling

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1493202>



