

Development of hydrophobic adsorbents for low concentration VOC(Ammonia, Toluene, Formaldehyde) treatment

정서령, 허 건, 이창하[†]
연세대학교
(leech@yonsei.ac.kr[†])

Volatile organic compounds (VOCs) are the essential element of indoor air pollution. Removal of volatile organic compounds (VOCs) from emission streams is of considerable interest due to the harmful effects of these pollutants, even at very low concentrations. In this study, the adsorption isotherms of VOCs on composite activated carbon and surface modified zeolite were measured by a volumetric method. The experimental isotherms were fitted with the models (i.e. Langmuir, Sips, etc.). In addition, the breakthrough experiments were conducted at 298 K and 10 ppm at dry condition (RH 0%) and humid condition (RH 50%). The adsorption dynamic behavior at dry and wet conditions was compared at two concentration range (10% and 100% of feed concentration). Based on the results, the relative effectiveness of adsorbent type on the VOC removal was analyzed. Especially, the dynamic removal at the wet condition was evaluated at each adsorbent. It can be used to advantage for testing the capacity of new or used respirator filters.