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### **Oxidative extraction of thiophene from dodecane in continuous process**

Liquid phase oxidation of thiophene in  $H_2O_2$  and subsequently extraction of the oxidized product into the solvent were studied. Titanium silicalite (TS-1) and 30% of  $H_2O_2$  were used as catalyst and oxidizing agent, respectively. The reactions were carried out at room temperature and 60 °C at atmospheric pressure. TS-1 was synthesized from a gel with molar composition  $94SiO_2 : 3.8TiO_2 : 15TPABr : 212NH_3 : 12.3H_2O_2 : 2168H_2O$  at 185 °C for 7 days. The catalyst was calcined at 550 °C and characterized by XRD, XRF, SEM, BET and FT-IR. It was found that, in batch process the reaction using methanol as a solvent showed activity higher than that using acetonitrile, acetic acid and water respectively. The oxidation activity was increased when the solvent/oil ratio was increased. The continuous stirred tank reactor (CSTR) was used for the oxidative extraction in the continuous process. (1-3%) Thiophene in dodecane (10-25 ml/hrs ) and (1.51%)  $H_2O_2$  in methanol (10-25 ml/hrs) were fed by peristaltic pump into the CSTR (150 ml) containing (0.5-2.0 g.) TS-1. It was found that increasing amount of catalyst and decreasing feeding rate lead to an increase in oxidative extraction of thiophene. The deactivation of the catalyst due to titanium leaching was investigated by reusing catalyst after 8 hours on steam. It was found that the leaching of titanium active site can be reduced when the calcinations temperature was raised.