

TiO₂ -Assisted Photocatalytic Removal of Phenol: Effect of CO-Pollutants.

Vohra, Muhammad S.¹ vohra@kfupm.edu.sa

Malik, Ayed A.¹

Al-suwaiyan, Mohammad S.¹

Bukhari, Alaadin A.¹

Abstract:

Use of titanium dioxide (TiO₂) assisted photocatalytic degradation (PCD) process was studied for the removal of aqueous phenol in presence of oil, lead, cyanide, and ammonia. Both UV light and TiO₂ were required for effective removal of phenol from the aqueous phase. For the phenol-only study, near complete phenol removal was noted within 6 h of reaction time. The presence of the other co-pollutants was generally noted to reduce the overall phenol removal (at 7 h reaction time) from the aqueous phase. For the mixed phenol and ammonia PCD systems at 10 and 5 ppm concentrations respectively, an increase in pH_i value was noted to reduce and enhance phenol and ammonia PCD respectively. Nevertheless the overall ammonia removal at pH_i 11 generally decreased with an increase in the ammonia concentration. Several mechanisms explaining the trends as noted in the present work have been discussed