

Abstract

The gas phase reduction of benzaldehyde on copper supported on SiO_2 and ZrO_2 were carried in the range temperature of 100°C – 350°C under hydrogen atmosphere. The products of benzaldehyde hydrogenation (benzylalcohol and toluene) and hydrogenolysis (benzene) were preferentially formed at low/middle and high reaction temperature respectively. The observed selectivities also suggested the existence of bifunctional sites for both the hydrogenation and hydrogenolysis reactions. These sites were believed to be involved as acidic/cationic centers for the adsorption of the oxygenate molecules and metal center for the hydrogenation or hydrogenolysis step.