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Removal of Benzaldehyde from Methanol Using Alkoxyamine Functionalized Silica Gel

Dino Sulejmanovic¹, Carrie Jo Pruitt¹, Eric Conte¹, Hasan Palandoken¹, and Shing-Yi Suen². (1) Western Kentucky University, Bowling Green, KY, (2) National Chung Hsing University, Taichung, Taiwan

Alkoxyamines (RONH₂) react readily with aldehydes and ketones to form stable oxime ethers, and, thus are expected to be excellent scavengers of these compounds. We installed alkoxyamines on silica gel surface to remove benzaldehyde from methanol. Silica gel was immersed in H₂O₂/H₂SO₄ solution to activate the surface. Activated silica gel was then reacted with 3-chloropropyltrichlorosilane. Displacement of the chloride with N-hydroxyphthalimide and subsequent treatment with hydrazine provided alkoxyamines on the surface of silica gel. The resulting silica gel surface with alkoxyamine functional groups was immersed in a 100 ppm benzaldehyde solution in methanol. After 24 h, the results showed 86.5 ± 7.2 % removal of benzaldehyde from methanol.

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