

Catalyst Design and Development for a Novel Methyl Methacrylate Process

John Runnacles,^a David Johnson^a

Lucite International UK Ltd, Wilton Centre, Wilton, Redcar, TS10 4RF, United Kingdom

Fax: +44 1642 447146, jonathan.runnacles@lucite.com

Abstract:

The two key catalytic steps in Lucite International's "Alpha" methyl methacrylate (MMA) technology are described. In the first step, carbon monoxide, ethylene and methanol are reacted in solution with a palladium phosphine catalyst to yield methyl propionate at high selectivity. In the second step, a catalyst composed of caesium/zirconia/silica is used for the reaction of methyl propionate with formaldehyde to form methyl methacrylate and water, again with high selectivity on raw materials. The presentation describes key catalyst and process development steps, key product and byproduct formation mechanisms, and highlights methodologies employed in industrial research to successfully commercialise novel catalytic processes.