

Bi-Functional Catalyst for Gas-Phase Acrylates Synthesis

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Abstract

BASF is the world's largest producer of acrylic acid and acrylates. Applications and end products based on acrylic monomers can be found everywhere, from paints to adhesives, water treatment products and plastics to detergents or textile fibers.

New routes for acrylates are continuously evaluated with focus on alternative raw materials, improving catalyst selectivity or integration of process steps. Increasing the overall process yields or integration of manufacturing steps can improve process economics and manufacturing competitiveness.

Taking as example methyl methacrylate (MMA), a new direct synthetic route will be presented. It involves the use of a bi-functional catalyst concept that allows the change in the starting raw materials and reduce number of synthetic steps. Therefore, MMA synthesis is pursued in a single-step gas-phase oxidative condensation process from propanal and methanol (**Figure 1**). The selective catalyst combines the oxidation and the aldol condensation functions.

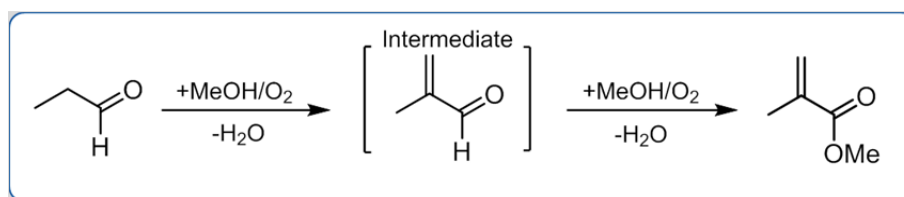


Figure 1. Single-step gas-phase synthesis of methyl methacrylate.