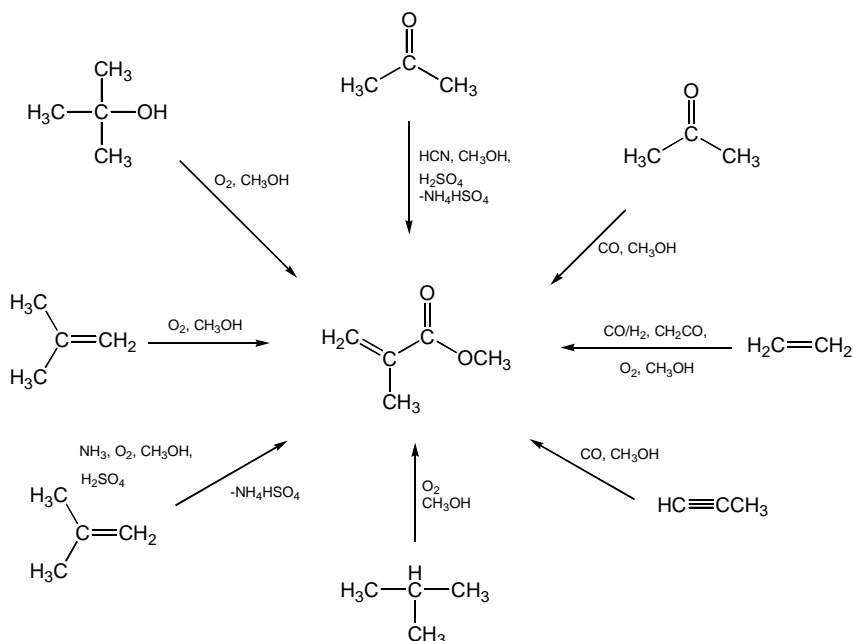


Chem Systems' Process Evaluation/Research Planning program has published a new report, *Methyl Methacrylate (99/00-2)*.

The conventional route for making methyl methacrylate (MMA) is based on the reaction of HCN and acetone to give acetone cyanohydrin. The cyanohydrin then undergoes acid assisted hydrolysis and esterification with methanol to give methyl methacrylate. This process, while quite economic if a producer has access to a low cost source of HCN, suffers from having to deal with the disposal of large amounts of ammonium bisulfate by-product. About 1.2 tons of ammonium bisulfate are formed from every ton of MMA produced. This disposal issue, as well the desire to avoid using or making highly toxic HCN, has stimulated a great deal of research over the years aimed at developing new and cost effective process technologies for making MMA.

These research efforts have paid off and a number of alternative routes have been commercialized over the last ten to fifteen years and several other approaches are close to commercialization. These new routes range from using new feedstocks, such as isobutylene, ethylene, or even methylacetylene to developing techniques for recycling the HCN and/or the ammonium bisulfate. The chemistries of these various approaches are outlined in the figure below.

ROUTES TO MMA



This new PERP report examines the chemistry, process technology, and economics of these competing routes. Both the commercially used and speculative new process are assessed. The specific technologies analyzed are listed in the table below.

MMA PROCESS TECHNOLOGIES ASSESSED IN THIS REPORT

Operating Commercial Processes

ACH route with integral H₂SO₄ recovery
Isobutylene (or TBA) gas-phase oxidation
BASF route from ethylene via propionaldehyde
Asahi Direct Metha route (i-C₄ gas/liq. oxdn)
MGC route with recycled HCN

Speculative New Processes

INEOS methyl propionate/HCHO
BASF idealized methyl propionate/methylal
Isobutane oxydehydrogenation (Sumitomo, Elf)
Shell/INEOS route via propyne carbonylation
MGC New Process with NH₃ recycle
Propylene carbonylation via isobutyric acid

Nexant Chem Systems Merge

Nexant, Inc., a leading provider of technology solutions and experienced-based technical and management consulting services to electric utilities, energy producers, oil and gas companies, governments, and energy end-users worldwide, has recently acquired Chem Systems. This acquisition, combining our services and products, allows us to span the full range of power, oil, gas, refining, petrochemicals and specialty chemicals sectors and provide our clients with a broader base of services in the energy and process industries.