

New catalyst could improve production of glass alternatives

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UO chemists' catalyst could improve production of glass alternatives

(Phys.org) -- University of Oregon chemists have identified a catalyst that could dramatically reduce the amount of waste made in the production of methyl methacrylate, a monomer used in the large-scale manufacturing of lightweight, shatter-resistant alternatives to glass such as Plexiglas.

David Tyler, Charles J. and M. Monteith Jacobs Professor of Chemistry, will present his findings Tuesday at the national meeting of the [American Chemical Society](#), Aug. 19-23 in Philadelphia, Penn.

[Global production](#) of methyl methacrylate was 4 million metric tons in 2010. Each kilogram produced also yields 2.5 kilograms of ammonium hydrogen sulfate, a corrosive [byproduct](#) that is not usable. Disposal of ammonium hydrogen sulfate is extremely energy intensive, consuming 2

percent of the energy used in Texas annually.

Tyler's team has identified a catalyst that doesn't produce ammonium hydrogen sulfate. The university is securing a provisional patent for the catalyst.

“There were some really fundamental chemical reasons why previous catalysts didn't work with this process,” Tyler said. “We've found a catalyst that overcomes all of those objections.”

With the identification of a working catalyst, Tyler will focus his research on how to accelerate the conversion to methyl methacrylate. The industrial standard for a practical catalyst is conversion of acetone cyanohydrin into methyl methacrylate in the span of a minute or two, Tyler said.

Provided by University of Oregon

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