Laboratory Evaluation for
A greener bromination of stilbene


Date: July 2006


Evaluation

A Greener Bromination of Stilbene

This experiment works very well in the time allotted for a laboratory period, resulting in a high yield and very pure product. The procedure is much safer than the traditional bromination because the bromine is generated in situ. However, care should still be taken when working with hydrogen peroxide and hydrobromic acid. This experiment effectively demonstrates alkene additions and is visually monitored by the loss of the bromine color. The students will also gain experience using a reflux apparatus and a vacuum filtration system.

Overall this experiment is much greener than the traditional bromination. Hydrogen peroxide and hydrobromic acid are less harmful than bromine and ethanol is a greener solvent than those traditionally used. The atom economy is slightly worse than the traditional experiment, but with the added safety of the reagents, a much greener alternative is available to students.

Students should be able to perform the reaction as written with little complication. There may be need to use a heating mantle instead of a water bath if students are having trouble getting their reactions to stir. It may be possible to try substrates other than stilbene, such as using the product from the Solventless Aldol Condensation.

The students should take care when handling the hydrobromic acid and hydrogen peroxide. It may be easier to assume twenty drops per milliliter rather than measuring them out. Gloves should be worn when handling the reagents.

This laboratory experiment is very clear and would be a great addition to any laboratory program especially for a comparison between the traditional and the green experiment. Students will enjoy a quick, easy, and colorful reaction. However, they will be averse to the length of time for drying and melting point.