

TARA EVANS and KEVIN L. EVANS, Department of Science and Mathematics, Glenville State College, Glenville, WV 26351. anti-Markovnikov Hydrobromination of Alkenes.

Alkyl bromides are key intermediates in many multi-step organic syntheses and are commonly synthesized from the hydrobromination of alkenes. While both the Markovnikov and anti-Markovnikov product can theoretically be produced from either the electrophilic addition mechanism or the radical mechanism, the electrophilic addition mechanism produces predominately the Markovnikov product while the radical mechanism mainly produces the anti-Markovnikov product. The regiochemistry of this reaction is controlled by the absence or presence of radicals. The addition of UV radiation or peroxide results in radical formation which yields predominately the anti-Markovnikov product. To improve the synthesis of the anti-Markovnikov product, conditions need to be modified to favor the production of radicals over carbocations. The objective of this research is to develop an efficient synthesis of the anti-Markovnikov alkyl bromides by generating hydrobromic acid from the *in situ* hydrolysis of phosphorous tribromide with water. Increasing the amount of phosphorous tribromide increases both the percent conversion and percent yield of the anti-Markovnikov alkyl bromide from both 1-octene and undecylenic acid. Based on the data, 1-octene is consumed within 2 hours with percent conversion greater than 80% anti-Markovnikov product when an excess of phosphorus tribromide is used. A minimum ratio of 1.6 mmol of hydrobromic acid to undecylenic acid consumes all of the alkene with percent yields ranging from 80-100%.