

"A Grignard-Like Organic Reaction in Water." Breton, G. W., and Hughey, C. A. *Journal of Chemical Education*, 1998, 75, 85-86.

Abstract: The Grignard reaction is often demonstrated in organic chemistry laboratory courses because it illustrates the important synthetic process of carbon-carbon bond formation. In addition, the reaction tends to generate enthusiasm among students because the magnesium metal "dissolves" as the reaction proceeds, and there is spontaneous evolution of heat. Despite its attractiveness, however, the reaction presents several practical problems for the lab instructor, including the need for anhydrous solvents (e.g., ether) and dry glassware, and occasionally, slow reaction initiation. Although these problems are far from insurmountable, the challenge of ensuring optimal reactivity over a week's worth of laboratory sessions can be exasperating. In an effort to retain the desirable features of the Grignard reaction while eliminating the associated practical difficulties, we have scaled and tested a known Grignard-like reaction between allyl bromide and benzaldehyde mediated by zinc in an aqueous medium (eq 1) (1). As in the Grignard reaction, a new carbon-carbon bond is formed, the reaction is mildly exothermic, and the zinc metal is consumed upon conduction in a saturated aqueous  $\text{NH}_4\text{Cl}$  solution (with THF as cosolvent), no special drying of solvents, reagents, glassware, etc. is required, and no induction period has been observed.