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A NOVEL POTTE TO CYCLOPROPANES FROM OLEFINS

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We wish to report a novel synthetic route to cyclopropanes by the reaction of olefins with dialkylzinc and methylene iodide.

The reaction was found during the course of a study of the catalytic activity of metal alkyl-polyhalomethane systems for vinyl polymerisation. The mechanism of the reaction might be related to that of the Simmons-Smith reaction¹⁾, that is, the synthesis of cyclopropanes by the reaction of olefins with methylene iodide and sinc-copper couple, but our novel reaction is much more rapid. The Simmons-Smith reaction needs 15-70 hours, but in this reaction, methylene iodide must be added slowly to control the rate of the reaction.

Thus, from cyclohexene (1.0 equiv.), diethylsinc (1.0 equiv.) and methylene iodide (1.1 equiv.), bicyclo [4,1,0] heptane was obtained in 53% yield (based on the olefin). B.p. 116° C., n_{D}^{25} 1.4549. The infrared spectrum was identical to that of the

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authentic sample.

Full details of these and other experiments will be published in the near future. Studies of the mechanism of the reaction are continuing. These studies will be extended to other metal alkyls and geminal dihalides.

Reference

(1) H.E. Simmons and R.D. Smith, <u>J. Am. Chem. Soc.</u>, <u>81</u>, 4256 (1959).