

## CHEMISTRY

Chairman: ROBERT B. FISCHER, Indiana University

E. T. MCBEE, Purdue University, was elected chairman for 1958

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### ABSTRACTS

**The Preparation of Some  $\omega$ -Trifluoro-aliphatic Acids.** E. T. MCBEE, C. W. ROBERTS and R. J. KENNEDY, Purdue University.—A general synthesis for  $\omega$ -trifluoro-aliphatic acids has been developed and has been applied to the preparation of  $\omega$ -trifluorododecanoic and  $\omega$ -trifluorotridecanoic acids. The method involves the free radical addition of trifluoromethyl iodide to the appropriate terminally unsaturated ester. The mode of addition was observed to proceed in analogy to the previously reported peroxide catalyzed addition of trifluoromethyl iodide to olefins. The iodine containing adduct need not be isolated for the subsequent reduction with zinc and acid. Acids of this type and their derivatives deserve interest because of their possible application as surface active agents.

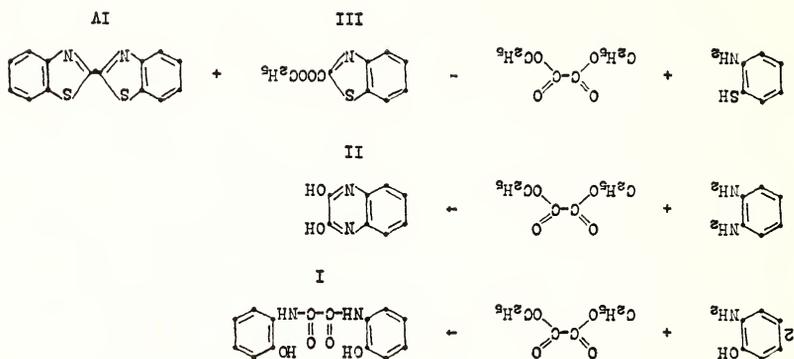
**Radical Addition of Hydrogen Bromide to 2,4,4-Trimethylpentene-2.** V. J. SHINER, JR. and MORRIS L. SMITH, Indiana University.—A study of the addition of hydrogen bromide to 2,4,4-trimethylpentene-2 in the vapor phase promoted by acetone and ultraviolet irradiation showed that although the reaction had the characteristics of a radical chain process the product was essentially pure 2-bromo-2,4,4-trimethylpentene. This is the first published report of the radical addition of hydrogen bromide to an unsymmetrically substituted aliphatic olefin giving the "normal" product, the one also obtained by ionic addition.

**Some Free Radical Additions to Perfluoro-1-heptene.** E. T. MCBEE, G. W. R. PUERCKHAUER, C. G. HSU, C. W. ROBERTS and L. R. BELOHLOV, Purdue University.—Though numerous free radical additions to gaseous perfluoroölefins are reported in the literature, little is known about the addition to higher boiling perfluoroölefins. In order to fill this gap and to gain further insight into the reactivity of this type of perfluoroölefins perfluoro-1-heptene was reacted with various common reagents.

Chlorine and bromine added readily under irradiation with UV-light. Bromotrichloromethane added less readily but gave still satisfactory conversions. Trichlorosilane which did not add to perfluoropropene under the same conditions, added to perfluoro-1-heptene to give tetradecafluoroheptyltrichlorosilane, of possible interest as a highly fluorinated alkyl silicone monomer. A series of agents such as carbon tetrachloride, carbon tetrabromide, chloroform and trifluoromethyl iodide could not be induced to react with perfluoro-1-heptene.

**Reactions of Diethyl Oxalate with Ortho-substituted Anilines.** E. CAMPAIGNE and J. E. VAN VERTH, Indiana University.—The mode of

reaction of diethyl oxalate with aromatic amines substituted in the *ortho*-position with hydroxyl, amino, or mercapto groups was profoundly affected by the nature of the *ortho*-substituent. The type of product formed was completely different in each case.



The formation of ethyl 2-benzothiazolecarboxylate (III) from 2-amino-benzenethiol represents a new synthesis of this ester which accomplishes in one step what previously required four or more steps by way of the acid. Only 2,2'-bibenzothiazole (IV) had previously been isolated from this reaction; however a four-hour reflux in one-molar excess of diethyl oxalate produced 80% of III contaminated with a small amount of IV, readily separated by recrystallization. With *o*-aminophenol and *o*-phenylenediamine, in neither case could an oxazole or imidazole ester be isolated; the only products were *o*,*o*'-dihydroxyoxanilide (I) and 2,3-quinoxalinediol (II), respectively. The addition of zinc chloride increased the rates of these reactions, but did not in either case change the nature of the product formed.