omer was an indispensable process.

Recently we found that alumina was a more effective catalyst for amorphous polymerization. Acetaldehyde was easily converted to high polymer without freezing of the monomer.

Furthermore, Natta *et al.* and ourselves succeeded respectively in the preparation of the crystalline polymer of aldehydes by organometallic compounds and metal alkoxide. The crystatalline polymer is much less soluble in organic solvents than the amorphous one.

The mechanism of the stereoregular polymerization was considered in connection with several synthetic organic reactions which involve metal alkoxides and carbonyl compounds. The coordination complex of aldehyde to the metal alkoxide seems to play an influential role in the stereoregular polymerization.

Polymerization of Alkylene Oxides

Junji FURUKAWA, Takeo SAEGUSA and Teiji TSURUTA

Bulletin of the Japan Petroleum Institute, 3, 39 (1961)

A review of catalysts for the high polymerization of alkylene oxides was given, from which it was deduced that a metal-oxygen bond was an essential element of active species in most cases.

Then, two catalytic systems which were found in our laboratory were discussed. First, the active species of the system of diethylzinc and water was mentioned, and the reaction mechanism was suggested. The second system consists of an organometallic compound and an acidic oxide such as alumina or silica-alumina. These systems induce anoinic polymerization of alkylene oxide and it can be assumed that adsorption of monomer on metal of the metal-oxygen bond plays an influential role both in activation of monomer and in controlling the stereoregularity.

Preparation of Crystalline Polyaldehydes

Junji FURUKAWA, Takeo SAEGUSA and Hiroyasu FUJII

Makromolekulare Chemie, 44, 398 (1961)

We found that some organometalic compounds and metal aldehydes including acetaldehyde, propionaldehyde and trichloroacetaldyde (anhydrous chloral) to give crystalline polyaldehydes. Crystalline polyacetalydehyde was much less soluble in organic solvents than the amorpbous one.

Active species of this polymerization was supposed to be metal alkoxides and the mechanism of polymerization was considered in connection with several syn-