

ABSTRACTS

Effect of Adjacent Groups on the Symmetrical CD₃ Deformation Frequencies

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Nippon Kagaku Zasshi (Journal of the Chemical Society of Japan, Pure Chemistry Section), **38**, 267 (1962)

The symmetrical CD₃ deformation frequencies δ_{CD_3} of deuterated methyl compounds CD₃XH_{m-1}, CD₃XD_{m-1}, (CD₃)₂XH_{m-2}, (CD₃)₂XD_{m-2},..... (CD₃)_mX are studied in relation to the type of X atom in groups IV~VII of the periodic table, where *m* is the valence of X atom. The frequency variations are ascribed to changes in the deformation force constants, and can be expressed as

$$\delta_{CD_3} = 317 \log\left(\frac{x_X}{r_{CX}^2}\right) + 1046$$

for almost every molecule examined. Here x_X represents the electronegativity of X atom and r_{CX} the C-X bond length. This equation is in good agreements with the theoretical one which was derived from the results previously proposed by the author for the symmetrical CH₃ deformation frequencies of undeuterated methyl compounds, and which was obtained by taking into consideration the change of *G* matrix on deuteration of methyl group. Discrepancies between observed and calculated frequencies for some molecules may be attributed to the coupling of the vibration with the other modes of vibrations in the molecule.

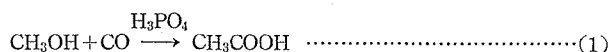
High Pressure Synthesis of Acetic Acid from Methanol and Carbon Monoxide

Kinetic Studies on the Reaction Catalized by Phosphoric Acid

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Journal of Japan Petroleum Institute, **3**, 708 (1960)

Kinetic studies have been made on the synthesis of acetic acid from methanol and carbon monoxide in the presence of phosphoric acid :



Following results have been found out :

1) Equilibrium data :

Methanol is in equilibrium with the dehydration products *i.e.*, Me₂O and H₂O,