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## INTERNAL ROTATION IN POLYMERS

EX AEDIBVS ACADEMICIS IN CIVITATE VATICANA

## INTERNAL ROTATION IN POLYMERS

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SUMMARIVM — Auctor exponit recentes investigationes circa internam polymerorum rotationem, quae investigationes effectae sunt examinando structuram compositorum-typorum (model compound).

As explained during the study week 1961, the unit stable structure of a carbon chain is in either the trans form T or the gauche form G [1]. Therefore, configurations of polymer chains can be denoted approximately as:

TTTT ....

GGGG ....

TGTG ....

TTGTTG ....

TTGGTTGG ....

In order to understand why the stable conformation of a polymer chain takes one of these forms, Shimanouchi et al. studied the structure of model compounds. For example the structure of meso and dl-2:4-dichloropentanes was studied as model compounds of polyvinyl chloride [2]. From the result the

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TTTT .... structure of syndiotactic polyvinyl chloride was reasonably explained. The stability is mainly due to the electrostatic interaction between dipoles of C-Cl bonds. The normal vibration calculation of the polymer in this conformation was made in order to assign observed infrared bands [3].

According to Natta et al. isotactic and syndiotactic polypropylenes take the conformations TGTG .... and TTGG ....., respectively. The stability of the forms can be explained from the stable conformations of a model compound, 2,4-dimethylpentane. The normal coordinate treatment and assignment of infrared absorption bands of isotactic polypropylene were made [4].

## REFERENCES

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