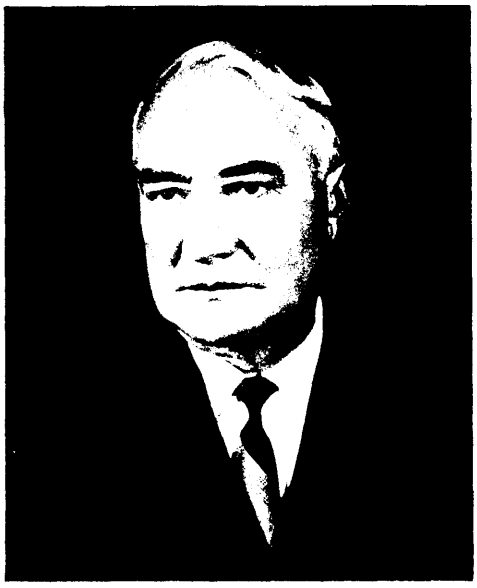
RUSSIAN CHEMICAL REVIEWS
Uspekhi Khimii

February 1967



VALENTIN ALEKSEEVICH KARGIN

Dear Valentin Alekseevich!

The Editorial Board of the journal "Uspekhi Khimii" convey to You their heartfelt greetings on the occasion of your sixtieth birthday and the completion of 45 years of your working life.

As an eminent physical chemist in our country, You have made a great contribution to the development of colloidal chemistry, polymer science, and also Soviet polymer industry. The wide range and depth of the problems of polymer science which You have solved, thereby gaining fundamental new knowledge in this field, have earned You the profound respect of scientists and industrial workers, both in our country and beyond its boundaries.

The Editorial Board of the journal "Uspekhi Khimii" wish You, dear Valentin Alekseevich, good health and new creative successes in your chosen branch of chemical science.

The Editorial Board of the Journal "Uspekhi Khimii"

U.D.C. 541.6:678.43/44

THE SUPERMOLECULAR STRUCTURE OF RUBBERS

V. A. Kargin, Z. Ya. Berestneva, and V. G. Kalashnikova

For a long time polymers were regarded as systems consisting of disordered, entangled, folded molecular chains. Crystallisation was thought to be the only possible ordered process in such systems.

However, a number of studies carried out in recent years failed to confirm these ideas on the structure of polymers. It was shown that, when polymers crystallised, spherulites with well defined boundaries and single crystals, much longer than the molecular chains, were formed. Geometrical considerations alone indicated that such structures could not be formed in a system of entangled molecular chains, and the hypothesis was therefore advanced that even amorphous polymers contain ordered elements [1,2].

The electron microscope studies of Kargin and coworkers showed that polymers with rigid molecular chains in the amorphous state are in fact well ordered systems [3-10]. Supermolecular structures may arise in these systems without a phase transition, the primary elements of these structures being globules or packets of molecular chains.