Many commercial polymers are currently prepared by free-radical copolymerization of two and more monomers. With increasing number m of their types good prospects appear for imparting to the products of the synthesis a variety of service properties. However, as m grows, the extent of experimental investigations to be performed for revealing optimum conditions for the process of manufacturing of copolymers with desired properties dramatically increases. Establishing the dependence of these latter on initial stoichiometry of monomers and the degree of their conversion by straightforward exhaustive search of possible variants within whole range of initial monomer mixture composition presents rather tedious experimental task even for terpolymerization. In the case of copolymerization of more than three monomers involved the solution of this problem calls for substantially greater amount of time consuming routine experimental work. That is why in designing of processes of synthesis of multicomponent copolymers the mathematical modeling method proves to be of prime importance, which enables a researcher to calculate promptly the values of statistical characteristics of molecular structure of these copolymers as well as to predict some of their performance properties. You could carry out this procedure for the products of free-radical copolymerization of up to $m = 6$ monomers using the program "Copolymerization Explorer" constituting present package. Other program, "Copolymerization Kinetics", is intended to find the dependence of the copolymerization rate on time or monomer conversion proceeding from experimental data you obtained by either dilatometry or calorimetry technique.

Mathematical models underlying the programs of present package are commonly recognized in polymer science. The validity of the results, which can be achieved by means of these programs, is ensured by solid physicochemical experimental verification for great number of real systems. Essential advantage of this package's programs, favoring their ample usage in practice, is the fact that necessary input parameters (such, for instance, as reactivity ratios, the Flory-Huggins parameters, glass transition temperatures) characterize either homopolymers or binary copolymers. The values of these parameters are presently available in literature for many particular polymers which provides you a possibility in many cases to start working with the programs immediately skipping preliminary stage of some additional experiments.

When conducting any copolymerization process you inevitably come up against the problem of characterization of the products synthesized. One of the main objectives for which the program "Copolymerization Explorer"

has been designed consists in rendering you support in the solution of this problem by means of mathematical modeling method. With this software modeling tool at your disposal you may immediately proceed to the calculation of the composition microstructure parameters as well as composition distribution of copolymers at any values of conversion of monomers. The number of their types may vary within the range from 2 to 6 inclusive which provides a possibility to employ this program for characterization of multicomponent copolymers. Just for them the advantages of the method of mathematical modeling are especially strongly pronounced, since it makes possible to avoid a great deal of routine work associated with performing physico-chemical experiments.

The second target, the program is aimed at, is associated with the prediction of such critically important properties of polymers as their transparency and heat resistance. When designing new materials, for instance plastics, on the base of copolymers the problem generally encountered by a researcher is connected with the area of compositions where these copolymers are transparent. The knowledge of particular range of compositions where the products of radical copolymerization will be at given temperature in the glassy state is equally important for practice. In order to have such an information it is necessary to find the dependence of the glass transition temperature of a copolymer on its composition and monomer conversion under which the copolymer of interest was prepared. Experimental finding of this dependence along with revealing the transparency regions even for the products of binary copolymerization is rather time consuming procedure, not to mention the terpolymers and, particularly, multicomponent copolymers for which the body of experimental work is known to enhance critically. The program in hand, being an efficient time and money saver, furnishes for you an opportunity to avoid this tedious procedure and to have the information you are interested in displayed right on your computer's screen.

The programs of the package have highly intuitive user-friendly interface. To try the "Copolymerization Explorer" download the archive, unzip it and run the Setup. To get an idea of the potentialities of the program load one of the predefined base variants (by selecting **Load Base Variant** option in the **File** menu) and perform calculations by clicking on the **Compute!** menu. Many of the special terms encountered in the programs should be readily familiar to those dealing with the free-radical copolymerization. However, an extensive help is also provided (the help file is located in the same directory with the program).

Here is the list of programs currently present in the "Copolymerization for Windows" software package:

- Copolymerization Explorer
- Copolymerization Kinetics

If you want to get any additional information on the package you may contact Semion Kuchanov at kuchanov@orc.ru.