METHODS OF PREPARATION OF POLYMERIC MICROCAPSULES-SHELLS FOR LASER TARGETS OF INERTIAL CONFINEMENT FUSION [[1]](#footnote-1)\*)

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The use of hollow polymer shells is promising for the manufacture of targets for inertial confinement fusion [1-4]. In this work, the material for such shells was poly-alpha-methylstyrene synthesized by cationic polymerization at a temperature of -70 - 90 °C. It was found by gel permeation chromatography that the obtained polymer samples have a broad molecular weight distribution from 104 to 106 with a maximum from 3\*105 to 4.5\*105. Hollow polymer shells have been prepared by microencapsulation in several technical versions of this method using vertical and horizontal rotary mixing methods. Shell microcapsules formed from a polymer solution using a dropper with three coaxial tubes were introduced into a water-salt medium with a surfactant - a stabilizer for the dispersion of shells in a liquid state. Fluorobenzene, mixtures of dichloroethane with benzene, and tetrachloroethane with ortho-xylene were used as solvents for the polymer, and solutions of polyvinyl alcohol with ammonium nitrate were used as the aqueous phase. Liquid microcapsules-shells, after removing the solvent upon heating in certain temperature-time regimes, without losing their shape, passed into a solid state. The shells obtained under optimal conditions after thermal removal of internal water had a good spherical shape with a maximum deviation of 0.5% from the average value of the sphere diameter and a deviation of 2% from the average diameter of 2150 μm for a group of 100 hollow shells.

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVIII/It/ru/DJ-Pastuhov.docx) [↑](#footnote-ref-1)