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On the Resolution of Inverse Problems in Technological Processes for the Production of Polymer Nanocomposites

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Analysis of the rheological constitutive equation used for polymer composition is accomplished. To model some technological processes of polymer nanocomposites modified model of Maxwell-Rabinovich-Gurevich is proposed. On the basis of comparative analysis of the methods used for solving inverse problems in technology a decision for some technological problems occurred in polymer nanocomposites is reached. Comparison between approaches used in regulation method by AN Tikhonov and wavelet-vaguelette decomposition is made, too. The present paper focuses both on Couette inverse problem and compression of a polymer and silicate nanocomposites between two parallel discs. Some numerical examples demonstrated several advantages of using inverse problems in modeling of technological processes are given. On this basis a scheme for control of processes with use of resolution of inverse problems is proposed.