

A Two-Level Approach to Describing the Process of Composite Synthesis

A.G. Knyazeva

Institute of Strength Physics and Materials Science, pr. Akademicheskii 2/4, 634055, Tomsk, Russia

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Corresponding author: [A.G. Knyazeva](mailto:A.G.Knyazeva@ispms.ru)

Abstract. The article describes some problems arising in the construction of models of synthesis of composites in modern technologies, which allow predicting the evolution of composition and properties. It is emphasized that the known two-level models practically do not discuss the correspondence between scales and the correctness of information transfer from one level to another, the correctness of computational algorithms requiring the agreement of scales both physical and geometrical. A general approach to building two-level models of synthesis of composites with reinforcing particles based on separation of physical scales is described. It is shown that two-level models of composites synthesis have thermodynamic justification. The variants of estimation of stresses accompanying the change of composition at micro-(meso-)level are proposed. Possible variants of mesolevel submodels for description of composition evolution are briefly presented.

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