

THE SYNTHESIS OF COMPOSITES WITH REINFORCING PARTICLES ON A THIN SUBSTRATE

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Abstract. The article proposes the model for synthesizing a composite coating "intermetallic matrix-reinforcing oxide inclusions" on a substrate under controlled heating by an external moving heat source. The problem is solved in dimensionless variables. The study reveals the main criteria determining the composition of the fabricated composite. It is discovered that, depending on the treatment conditions, the matrix composition may include the main total product or residual unspent reagents and intermediate products, which testifies the nonequilibrium composition of the composite.

Keywords: electron beam treatment, chemical reaction, numerical modeling