

## Parameters Identification of Viscoplastic Models Using Evolutionary Algorithms

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The constitutive models of viscoplastic flow involve several material constants, difficult to be determined experimentally for the whole range of application. In this work a method for parameters identification of viscoplastic laws is presented, using the results of standard experimental tests only. The solution of the resulting inverse problem applies optimization techniques based on evolutionary algorithms. This stochastic search method, inspired by natural evolution, is applied to minimize the difference between simulated curves and measured experimental data. The metal alloys are investigated in the numerical examples and the experimental curves of tension tests at different strain rates are used. The identification of parameters is carried out for the viscoplastic law of Bodner-Partom, Chaboche and Perzyna. Several independent runs of the optimization procedure have been performed in order to evaluate the efficiency of the approach. Very good results have been obtained for relatively large limits of parameters variation.

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