# Methods of solving inverse problems of mathematical physics to determine effective physical properties of carbon ablators for thermal protection

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*The paper introduces the methods to determine characteristics of carbon degradation caused by its heterogeneous oxidation, which is necessary for predicting the ablation of rocket and space heat-protective equipment coatings parts in oxygen-containing medium under high temperature effect. The paper presents the basic scheme of ablation experiments for a dense carbon material and describes a carbon ablation calculation-theoretical model during the heterogeneous material oxidation process at moderate ablation rates. The paper considers the methods for solving the inverse problem of mathematical physics to identify effective physical properties of carbon material, i.e. its kinetic constants, which are included in the adopted ablation model. The study gives an example of solving an optimization problem to determine the kinetic constants of carbon heterogeneous oxidation.*

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