

Abstract Submitted
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Composite Material Behaviour Under Shock Loading R. VIGNJEVIC, J.C. CAMPBELL, P. HAZELL, N.K. BOURNE, Cranfield University, UK — Composite materials have been of significant interest due to widespread application of anisotropic materials in aerospace and civil engineering problems. For example, composite materials are one of the important types of materials in the construction of modern aircraft due to their mechanical properties. The strain rate dependent mechanical behaviour of composite materials is important for applications involving impact and dynamic loading. Therefore, we are interested in understanding the composite material mechanical properties and behaviour for loading rates between quasistatic and $1 \times 10^8 \text{ s}^{-1}$. This paper investigates modeling of shock wave propagation in orthotropic materials in general and a specific type of CFC composite material. The determination of the equation of state and its coupling with the rest of the constitutive model for these materials is presented and discussed along with validation from three dimensional impact tests.

Rade Vignjevic

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