

Abstract Submitted  
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**On the interaction between blast wave and reticulated foams**

JAMES WILGEROTH, WILLIAM PROUD, THUY-TIEN NGOC NGUYEN, Imperial College London, INSTITUTE OF SHOCK PHYSICS TEAM, CENTRE FOR BLAST INJURY STUDIES TEAM — Injuries to the tympanic membrane (ear drum) and inner ear are particularly common in individuals subjected to blast overpressure, such as military personnel engaged in conflict. Consequently, there is a demand for improved auditory protection systems, which are capable of both preventing this type of injury while providing maximum situational awareness to the user. In this study, a number of reticulated (open cell) foams have been subjected to dynamic compression using shock tube apparatus. Specific effects of porosity; relative density, which is determined by the ratio of cellular material to solid material from which the foam is made; sample thickness; incident pressure; and shock pulses of varying timescale upon the evolution of peak overpressure behind foam samples have been investigated. In addition, the use of Schlieren imaging techniques has allowed for detailed examination of gaseous flow at the rear surface of shocked foam samples.

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