Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

A Compaction Model for Highly Porous Silica Powder. P.D. CHURCH, I.G. CULLIS, D. PORTER, QinetiQ plc, Fort Halstead, Sevenoaks, Kent UK, K. TSEMBELIS, PCS, Cavendish Laboratory, Madingley Road, Cambridge, CB3 0HE, UK — This paper describes research to develop an equation of state to describe the behaviour of a highly porous silica powder. It shows that whilst molecular modelling techniques can be readily applied to develop a description of a compact material the description of the compaction process is more problematic. An empirical model, based upon the Lennard-Jones potential, has been shown to be capable of describing the compaction process observed in simple experiments. This development and application of the model in the Eulerian hydrocode GRIM to reproduce experimental plate impact data over a wide range of impact velocities is described and the results compared with experimental data.

Konstantinos Tsembelis
PCS, Cavendish Laboratory, Madingley Road, Cambridge, CB3 0HE, UK

Date submitted: 11 May 2005 Electronic form version 1.4