Abstract Submitted
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Ray Tracing to Predict Optical Behaviour of Shock Compressed Dielectrics[1] GARETH R. TEAR, WILLIAM G. PROUD, Imperial College London — In order to investigate the optical response of dielectric materials under shock compression, a characteristics model has been combined with a three dimensional optical ray tracing model. A general biaxial optical model is used along with a first order photoelastic model which couples the characteristics component to the optical component. This optical model is three dimensional and as such can be used to investigate small deviations from the perfect one dimensional shock wave which is typically assumed in plate impact experiments. A detailed description of the model will be presented, and comparison to available literature as well as recent experiments on the optical behaviour of shock compressed a-cut calcite and a-cut sapphire. The authors would like to thank Dr D E Eakins and Dr D J Chapman for fruitful discussions.

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