

Abstract Submitted
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Semi-Empirical Model for the Electrical Behavior of Explosively Driven Ferroelectric Generator MINSU SEO, MYUNG-HWAN PARK, INHO KIM, Agency for Defence Development, P.O. Box 35-5, Yuseong, Daejeon, 305-600, Korea — Ferroelectric ceramic compressed by a strong shock releases a large amount of bound surface charges and it is the reason why it has been widely utilized in compact pulse power devices. The origin of charge release from the ceramic has not known clearly but inferred as either domain reorientation or stress induced phase transformation. In this work we introduce a semi-empirical model to describe the electrical behavior of explosively driven ferroelectric generator. A PZT ceramic is considered as a ferroelectric material into which the shock wave is induced normally to its polarization vector. A series of experiments has been performed to obtain the shocked properties of PZT. The parameters in the semi-empirical model have been determined from measurement. A comparison of the calculated and experimental results for both resistive and capacitive loads shows in good agreement.

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