Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

Electrical response of KNN lead free ferroelectric ceramics under shock compression. FUPING ZHANG, YUSHENG LIU, HONGLIANG HE, Institute of Fliud Physics — PZT 95/5 ferroelectric ceramics has been utilized for the use in shock driven pulsed power supplies for many years. Considering KaNaNbO3 (KNN) has the almost same phase in phase diagram as PZT, KNN is the candidate material for the use in shock driven pulsed power supplies. Comparing with PZT 95/5, KNN is a green environment friendship material with a low density. The electrical response of KNN under shock compression had been studied. Results show that the shock stress is below 3.0 GPa, the depoled current have two platforms, the first platform has the high value, the second platform has the low value and the depoled charge is lower than the total charge of KNN, which means uncompleted discharge of KNN. When the shock stress increased above 3.0 GPa, the depoled current has one platform and the depoled charge is almost the same as the total charge of KNN. The two platforms in current may be formed by two phase transitions under shock compression, the detailed phase transition need further researches.

Fuping Zhang
Institute of Fliud Physics

Date submitted: 16 Feb 2017 Electronic form version 1.4