Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Experimental analysis of quasi-static and dynamic fracture initiation toughness of gy4 armor steel material[1] PENG REN, Jiangsu University of Science and Technology, ZITAO GUO, Jiujiang University — Quasi-static and dynamic fracture initiation toughness of gy4 armour steel material are investigated using three point bend specimen. The modified split Hopkinson pressure bar (SHPB) apparatus with digital image correlation (DIC) system is applied to dynamic loading experiments. Full-field deformation measurements are obtained by using DIC to elucidate on the strain fields associated with the mechanical response. A series of experiments are conducted at different strain rate ranging from 10-3 s-1 to 103 s-1, and the loading rate on the fracture initiation toughness is investigated. Specially, the scanning electron microscope imaging technique is used to investigate the fracture failure micromechanism of fracture surfaces. The gy4 armour steel material fracture toughness is found to be sensitive to strain rate and higher for dynamic loading as compared to quasi-static loading.

[1]This work is supported by National Nature Science Foundation under Grant 51509115

Peng Ren
Jiangsu University of Science and Technology

Date submitted: 06 Nov 2015 Electronic form version 1.4