## Accepted Manuscript

The influences of mode II loading on fracture process in rock using acoustic emission energy

Qing Lin, Dengtian Mao, Shan Wang, Shiyuan Li

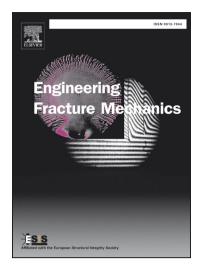
PII: S0013-7944(18)30125-5

DOI: https://doi.org/10.1016/j.engfracmech.2018.03.001

Reference: EFM 5893

To appear in: Engineering Fracture Mechanics

Received Date: 1 February 2018 Accepted Date: 1 March 2018



Please cite this article as: Lin, Q., Mao, D., Wang, S., Li, S., The influences of mode II loading on fracture process in rock using acoustic emission energy, *Engineering Fracture Mechanics* (2018), doi: https://doi.org/10.1016/j.engfracmech.2018.03.001

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## **ACCEPTED MANUSCRIPT**

# The influences of mode II loading on fracture process in rock using acoustic emission energy

Qing Lin<sup>a&b</sup>, Dengtian Mao<sup>c</sup>, Shan Wang<sup>b</sup>, Shiyuan Li<sup>a&b</sup>

<sup>a</sup>State Key Laboratory of Petroleum Resources and Prospecting, China University of Petroleum, Beijing 102249, China

<sup>b</sup>Department of Engineering Mechanics, College of Petroleum Engineering, China University of Petroleum, Beijing 102249, China

<sup>c</sup>CNOOC Ener Tech-Safety & Environmental Protection Co. Ltd, Tianjin 300457, China

#### Abstract:

The influences of mode II loading on fracture process in Berea sandstone were investigated by comparing mode I and mixed-mode fractures that were created by center and eccentric notch beams under three-point bending. Fracture process was characterized by Acoustic Emission (AE) and related energy. Experimental results show mode II loading does not affect the length of fully-developed fracture process zone and maximum value of AE energy. However, it affects the zone from reaching fully-developed stage, i.e., mixed-mode fracture before or at peak load, and mode I after the peak. It also breaks the similarity and symmetry of AE events pattern.

*Keywords*: Fracture process zone, Acoustic emission (AE), AE energy, mixed-mode fracture, mode II loading.

#### Download English Version:

# https://daneshyari.com/en/article/7168905

Download Persian Version:

https://daneshyari.com/article/7168905

<u>Daneshyari.com</u>