

Accepted Manuscript

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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>

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

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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.

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