



## Relating Cohesive Zone Model to Linear Elastic Fracture Mechanics (Paperback)

By John T Wang

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The conditions required for a cohesive zone model (CZM) to predict a failure load of a cracked structure similar to that obtained by a linear elastic fracture mechanics (LEFM) analysis are investigated in this paper. This study clarifies why many different phenomenological cohesive laws can produce similar fracture predictions. Analytical results for five cohesive zone models are obtained, using five different cohesive laws that have the same cohesive work rate (CWR-area under the traction-separation curve) but different maximum tractions. The effect of the maximum traction on the predicted cohesive zone length and the remote applied load at fracture is presented. Similar to the small scale yielding condition for an LEFM analysis to be valid, the cohesive zone length also needs to be much smaller than the crack length. This is a necessary condition for a CZM to obtain a fracture prediction equivalent to an LEFM result.



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