

INSTRUCTIONS TO PREPARE AN ABSTRACT FOR THE ICMAMS2019 CONFERENCE

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This paper presents a detailed study on the fracture behaviors of soft materials with hard inclusion. Stress concentrations on the interfaces of hard and soft materials are considered as the key factor for structure fracture. Based on linear fracture theory, the fracture behaviors of soft materials with elliptical hard inclusion are investigated. Stress concentrations, consisting of tensile, hoop and compressive stress, are observed with changes of inclusion geometries and the modulus ratio of hard and soft materials. And their influences on the categories of principal stress concentration are shown in a phase diagram in current paper. Finite element analysis is carried out with consideration of the large deformation of soft material, which demonstrates the effectiveness of the theoretical predictions in a great scope of applied loading. Finally, the predictions based on theoretical and simulation results are validated by experiments. This work points out that the hard line inclusion is the source of danger in soft materials just like the crack in brittle materials.

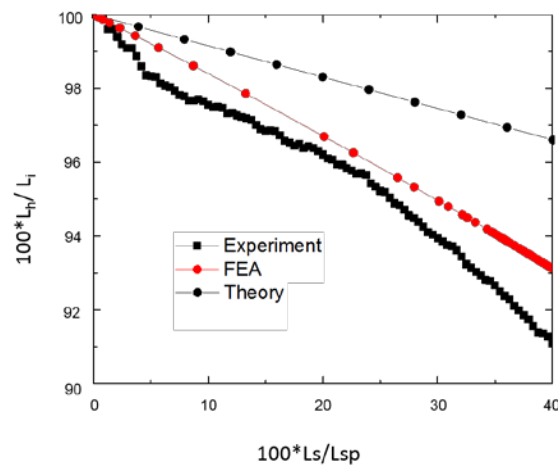


Figure 1 Example of a figure.

The results predicted by experiments agreed reasonably with those from FEA and theoretical models, as shown in Fig. 1.