

SPHERICAL INDENTATION STUDY ON INCIPIENT PLASTICITY OF MEDIUM-/HIGH-ENTROPY ALLOYS

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A sudden displacement excursion or “pop-in” event during spherical indentation test of a metallic material has been reported to be attributed to the onset of plasticity. In this work, we explored the pop-in phenomena and their statistical nature of medium-/high-entropy alloys through spherical nanoindentation experiments with a variety of tips having different radii. The influence of hydrogen on the yielding behavior in the alloys was also examined through the analysis of the hydrogen-induced change in the maximum shear stress underneath the indenter for the first pop-in. The obtained results were discussed in terms of the tip radius effect and its interplay with hydrogenation. * This work was supported by the National Research Foundation of Korea (NRF) grants funded by the Korea government (MSIT) (No. 2020R1A2B5B01001446 and No. 2020R1A5A6017701).

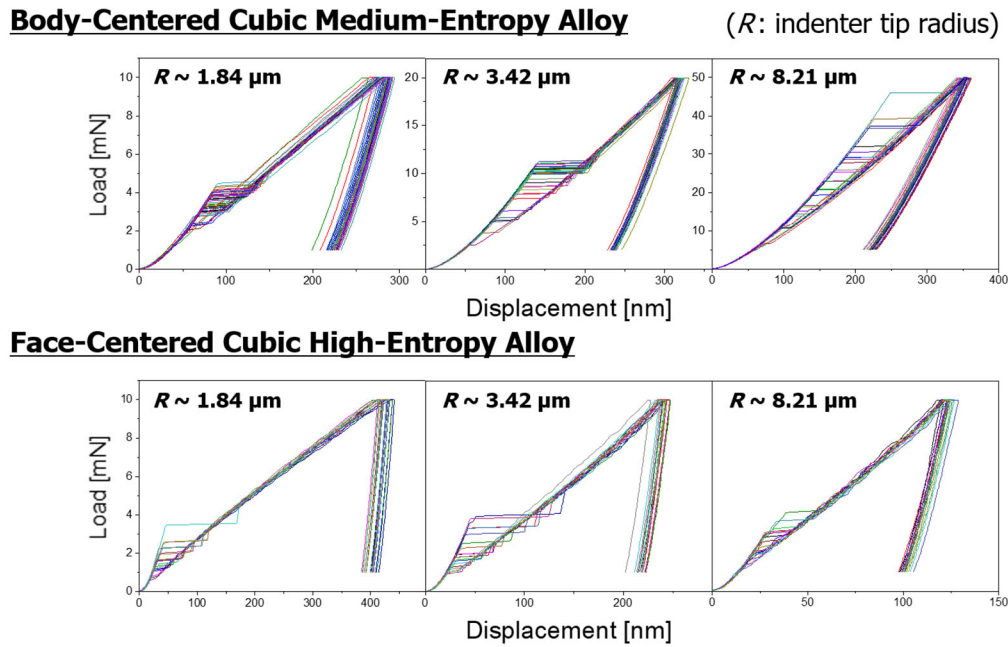


Figure 1. P - h curves of medium-/high-entropy alloys