

Zhang, F., Hwang, K., Huang, Y., and Qin, J., Friction Effect on Indentation, *Engineering Mechanics*, 23, 2006, pp. 1-6

Abstract

Microindentation is a classical experiment which shows a size-dependent material behavior under nonuniform deformation at micron and submicron scales. Many investigations on microindentation have been carried out under frictionless assumption while less discussion has been undertaken on the friction effect. Based on a conventional theory of mechanism based strain gradient plasticity (CMSG), a FEM analysis was developed to investigate the friction effect on micro-indentation. For the widely used Berkovich indenter, which can be simplified to a conical indenter with 140.6° cone angle, the result shows that the friction effect was negligible and the problem could be simplified to be frictionless.