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# Mechanical Response of Melt-Quenched Zeolitic Imidazolate Framework Glass to Sharp Contact Loading

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Discovery of the new family of melt-quenched (MQ) glasses - zeolitic imidazolate framework (ZIF) glasses - has induced a substantial interest in exploring the nature and properties of these materials. Despite much progress in the understanding of ZIF glass formation and structure, their deformation behavior has not been well studied, especially, their fracture behavior has not yet been reported to the best of our knowledge. In this presentation, we report on the deformation and cracking behavior of MQ-ZIF-62 glasses. By employing both Vicker's microindentation and Berkovich nanoindentation techniques, we analyze the mechanical response of the ZIF glass to indentation at different load scales. Atomic force microscopy (AFM) analysis of indents reveals minimal pile up and shear bands on the indent faces, implying a high degree of local plastic deformation and densification. Despite a fully polymerized structure of ZIF glasses, analogous to that of silica glass, they exhibit indentation cracking patterns similar to those of 'normal' oxide glasses. We interpret this mechanical response of the ZIF glasses in terms of the nature of their chemical bonding and structural features, which are significantly different from those of other families of network glasses.