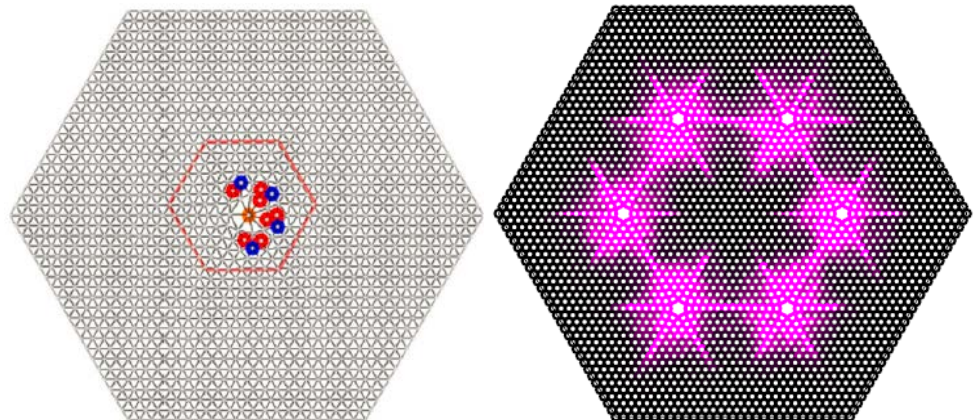


# Polydispersity-driven topological defects as order-restoring excitations

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Defects play an essential role in many aspects of materials. To actively introduce defects and to understand their roles in affecting the crystallinity constitutes fundamental problems in materials science. In this paper we report the introduction of topological defects by size polydispersity. Size polydispersity is important in several research fields to know how size polydispersity affects the degree of crystallinity and enhances mechanical properties of materials. In this study, the defects are found to be order-restoring excitations protecting the crystalline order.

*Figure The topological defect structure (left) and the stress pattern (right) around the impurity particles with “wrong” sizes.*



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