

Small (nanometer-sized) crystals of multi-component, complex metal oxides have useful properties for applications in electronics, optics, sensors, and mechanical actuators. In order to realize this potential, engineers need to be able to put tiny crystals exactly where they are needed and to control the orientation of the crystal's lattice.

Researchers at the Wisconsin MRSEC and Argonne National Lab have studied a new way to place tiny oxide crystals through controlled, seeded crystallization of disordered, amorphous thin films. They have demonstrated controlled crystal growth at desired locations either from seeds of the same material (homoepitaxy) or seeds of a different material (heteroepitaxy). This work is an important step toward general control of oxide crystals and new applications.

Y. Chen, J. A. Tilka, Y. Ahn, J. Park, A. Pateras, T. Zhou, D. E. Savage, I. McNulty, M. V. Holt, D. M. Paskiewicz, D. D. Fong, T. F. Kuech, and P. G. Evans, *J. Phys. Chem. C* (2019). DOI: 10.1021/acs.jpcc.9b00078

