Abstract Submitted
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A Microscopic View of Repeated Polytypism in Self-organization of Hierarchical Nanostructures[1] MU WANG, MING LIU, GUO-BIN MA, ZHAO-WU WANG, RU-WEN PENG, Natl. Lab. Solid State Microstructures, Nanjing University, China — We demonstrate that the stacking-fault-induced repeated polytypism of wurtzite (WZ) and zinc-blend (ZB) phases may lead to a hierarchical nanostructure of ZnO possessing a hexagonal central trunk decorated with thin blades. Each blade keeps a fixed angle to the central trunk, resembling propellers with seemingly six-fold symmetry. The blades epitaxially nucleate on the ZB stripe assisted by the defect-induced reentrant corners at the interface of ZB-WZ phases. Our experiments reveal a unique approach to assemble hierarchical nanostructures, and the mechanism could be general to many materials.

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