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A quadruply twinned core for the growth of nanotetrapods and related structures.¹ S.K. HARK, Z. LIU, The Chinese University of Hong Kong, HARK TEAM — Nanotetrapods and related complex nanoarchitectures, such as multi-armed and tricrystal structures, are key functional elements and interconnections in future “bottom-up” approach to nanotechnology. The growth of these special nanostructures is believed to proceed from a core, several models of have been suggested. However, the occurrence of some tetrapod related nanostructures, observed by us and also reported by others, can not all be explained by these models. We have obtained aligned ZnCdSe tetrapod related nanostructures using metalorganic chemical vapor deposition on GaAs substrates. Based on high resolution transmission electron microscopy and crystallographic analyses, we propose a new quadruply-twinned model for their core, from which nanotetrapods, nanoswords and related nanoarchitectures can grow. In this model, the core contains four wurtzite structured heptahedrons connected by six $\{0-113\}$ twins. Different from the other existing models, no polarity of surface is needed to explain the growth of the branching arms of the nanotetrapods

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S.K. Hark
The Chinese University of Hong Kong

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