

水熱合成 ZnO ナノワイヤ結晶成長における油水混合溶媒の役割

Effect of Water-Organic Cosolvent on Hydrothermal ZnO Nanowire Growth

九大先導研 秋廣 侑哉、長島一樹、高橋綱己、細見拓郎、金井真樹、○柳田 剛

Kyushu Univ., Yuya Akihiro, Tsunaki Takahashi, Takuro Hosomi, Kazuki Nagashima, Masaki Kanai,

○Takeshi Yanagida

E-mail: yanagida@cm.kyushu-u.ac.jp

Here we show the effect of water-organic (acetone, *tert*-butyl alcohol and isopropanol) cosolvents on an anisotropic nanowire growth of ZnO via a hydrothermal method. The addition of organic solution does not alter the face selective crystal growth nature but significantly promotes the crystal growth of both length and diameter of nanowires. Systematic investigations reveal that a variation of dielectric constant in the cosolvent can rigorously explain the observed effect of water-organic cosolvent on the ZnO nanowire growth via the degree of supersaturation. The difference between acetone, *tert*-butyl alcohol and isopropanol on the cosolvent effect can be interpreted in terms of a local solvent-sorting effect.

