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Fabrication of Self-assembly Polycrystalline Perovskite Microwires and Photodetectors

Can Zhu^{1,†}, Yang Tang^{1,†}, Feng Chen^{1,2}, A.Gowri Manohari¹, Ye Zhu¹, Zengliang Shi¹,
Chunxiang Xu^{1,*}

¹State Key Laboratory of Bioelectronics, School of Biological Science & Medical
Engineering, Southeast University, Nanjing 210096, China

²Department of Physics, Southeast University, Nanjing 210096, China

Abstract

In this work, perovskite $\text{CH}_3\text{NH}_3\text{PbI}_3$ (MAPbI₃) microwires has been synthesized via a simple solution self-assembly method for facile fabrication of photoelectronic devices. A two-step growth process was proposed to elucidate the formation and growth mechanisms of the microwires. Also, a photodetector was fabricated and analyzed its photoresponse characteristics. The device presented a stable and repeatable photocurrent response. The on-off ratio was about 4.02×10^3 as well as the rise and decay time was 0.2 ms and 0.25 ms which are comparable even superior to other reported photodetectors of perovskite.

Keywords: perovskite microwires, nucleation, solution growth, photodetectors

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Corresponding Author E-mail address: xcxseu@seu.edu.cn

[†]These authors contributed equally to this work.

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