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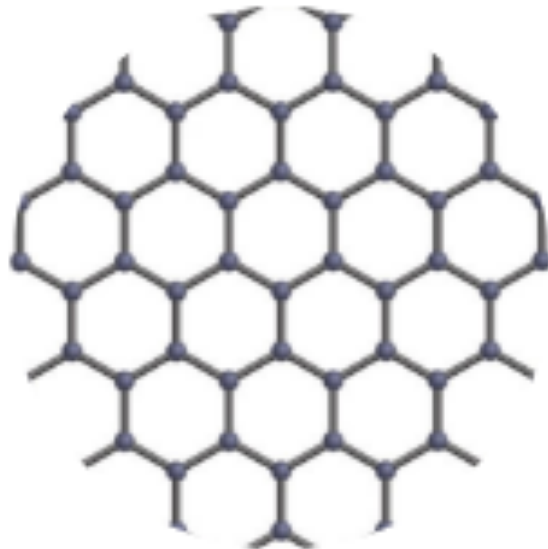
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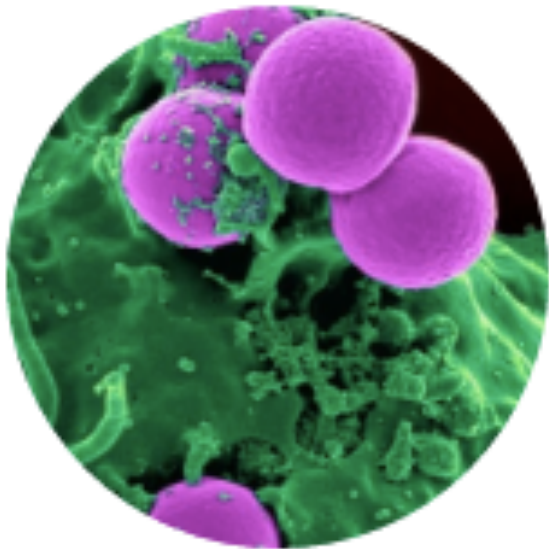
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## Perovskites



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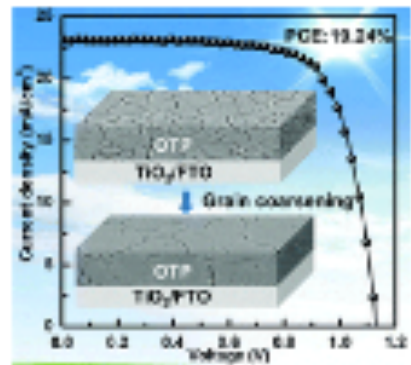
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### Coarsening of one-step deposited organolead triiodide perovskite films via Ostwald ripening for high efficiency planar-heterojunction solar cells



**Imported:** 12 Apr 2016 | **Published:** 24 Mar 2016

**Weidong Zhu, Chunxiong Bao, Yangrunqian Wang, Faming Li, Xiaoxin Zhou, Jie Yang, Bihu Lv, Xiaoyong Wang, Tao Yu, Zhigang Zou**

**Dalton Transactions**

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Coarsening of one-step deposited organolead triiodide perovskite films via Ostwald ripening for high efficiency planar-heterojunction solar cells



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Large organolead triiodide perovskite (OTP) grains with little intragranular defects are beneficial to minimize carrier recombination, hence boosting cell performance. However, OTP films deposited by the widely used one-step spin-coating route are usually composed of small grains, because the poor thermal stability of OTP inherently restricts the processing window (temperature, time) during the film preparation, thus limiting grain coarsening in the film. Herein, the remarkable grain coarsening via Ostwald ripening in one-step deposited OTP films has been successfully realized by a facile and effective post-synthesis high-temperature heating treatment assisted with spin-coated CH<sub>3</sub>NH<sub>3</sub>I. By systematically investigating the heating treatment parameters, a high-quality OTP film with an enlarged average grain size from ~280 nm to 1.2 μm, greatly enhanced crystallinity, and excellent stoichiometry is achieved. Benefiting from such improved features, this modified film shows significantly reduced defect states corresponding to the decrease of recombination centers, as well as enhanced carrier transport and injection properties, which lead to the dramatically boosted efficiency from 14.54% to 16.88% for planar-heterojunction solar cells. More importantly, the improved OTP film quality provides the possibility of thickening the absorber layer of cells to realize more sufficient absorption without serious aggravation of charge recombination. By further optimizing the thickness of the coarsened OTP films, highly efficient cells with relatively excellent reproducibility and an optimal efficiency of 19.24% are achieved.



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Pb2MnTeO6 Double Perovskite: An Antipolar Anti-ferromagnet


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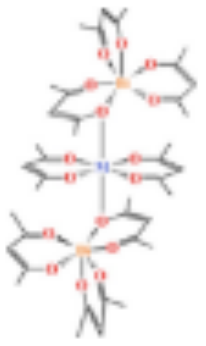
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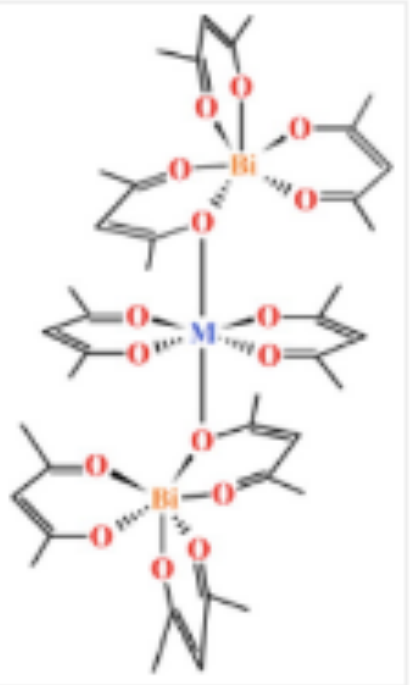
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Craig M. Lieberman, Zheng Wei, Alexander S. Filatov, Evgeny V. Dikarev

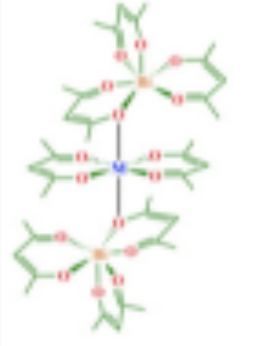
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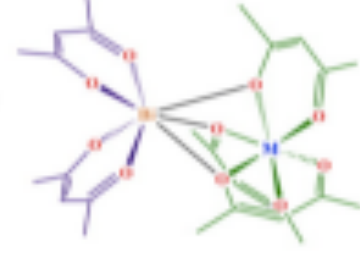
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Bi:M = 2:1  
M = Mn, Zn

Vs

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Bi:M = 1:1  
M = Mn, Co, Ni

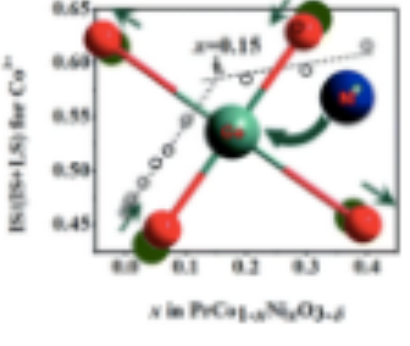
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Impact of hole doping on spin transition in perovskite-type cobalt oxides



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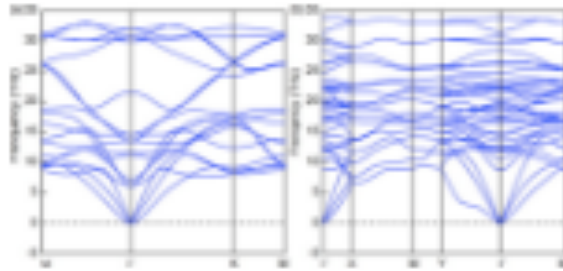
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Graphene-like Two-Dimensional Ionic Boron with Double Dirac Cones at Ambient Condition



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Fengxian Ma, Yalong Jiao, Guoping Gao, Yuantong Gu, Ante Bilic, Zhongfang Chen, Aijun Du

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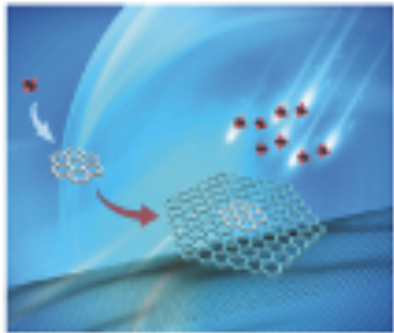
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Rapid Growth of Large Single-Crystalline Graphene via Second Passivation and Multistage Carbon Supply



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Li Lin, Luzhao Sun, Jincan Zhang, Jingyu Sun, Ai Leen Koh, Hailin Peng, Zhongfan Liu

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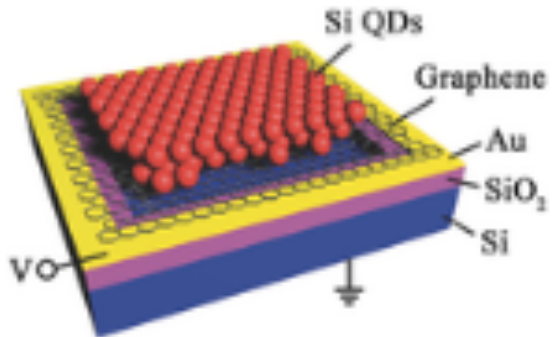
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Graphene Coupled with Silicon Quantum Dots for High-Performance Bulk-Silicon-Based Schottky-Junction Photodetectors



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Ting Yu, Feng Wang, Yang Xu, Lingling Ma, Xiaodong Pi, Deren Yang

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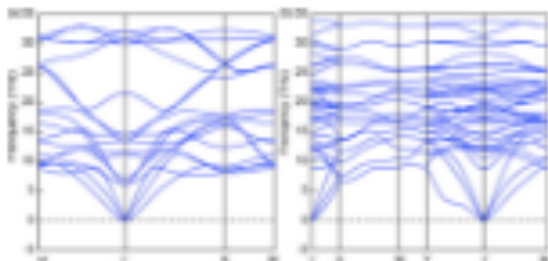
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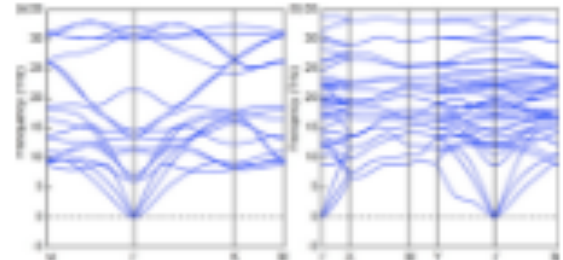
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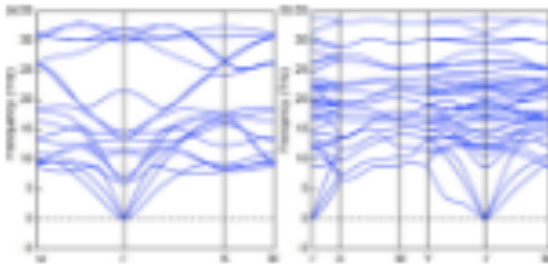
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