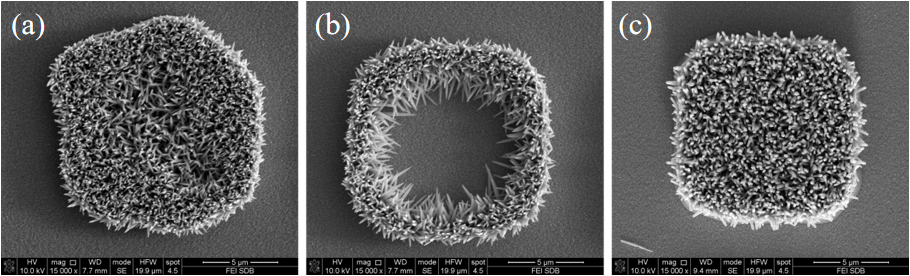
**Supporting Information**

Design and tailoring of patterned ZnO nanostructures for perovskite light absorption modulation

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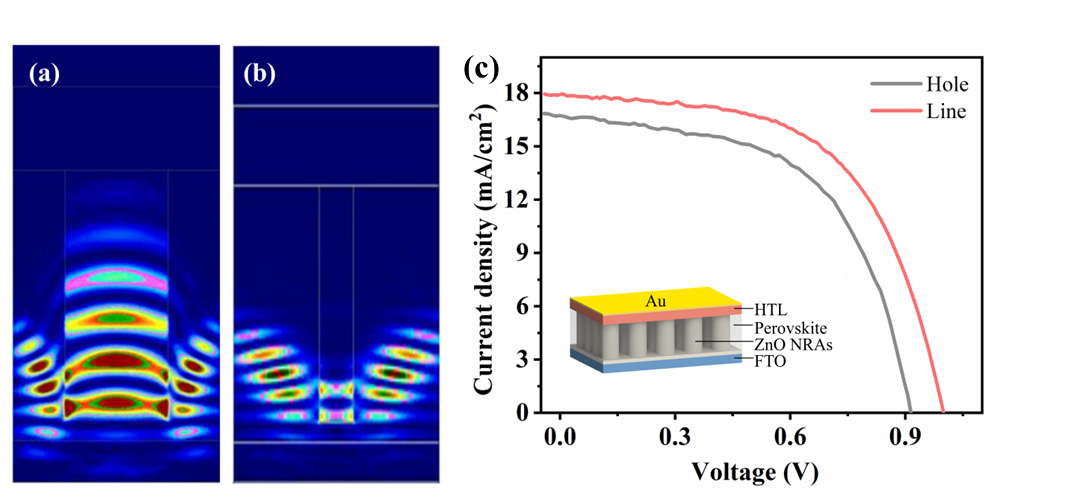
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**Fig. S1. Locally enlarged view of ZnO nanorods: (a) underexposure; (b) overexposure; (c) suitable exposure.**

**FS2**

**Fig. S2. Over developing (a) and properly developing (b) line patterned ZnO NRAs.**



**Fig. S3.**  **FDTD optical absorption simulation results of patterned (a) and unpatterned (b) ZnO NRAs. (c) Comparison of I-V curves of different patterned ZnO NRAs.**

FS3

**Fig. S4. SEM profile of ZnO spin-coated perovskite with hole (a) and line (b) patterns.**

**Table S1.** **Comparison of *J*–*V* data of different patterned battery devices**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | *V*oc / V | *J*sc / (mA⋅cm−2) | FF / % | *η*c / % |
| Pattern (line) | 1.00 | 17.91 | 57.45 | 10.28 |
| Pattern (holes) | 0.91 | 16.73 | 56.36 | 8.62 |

Note: FF**⎯**fill factor; *η*c**⎯** photoelectrical efficiency.