Low-Temperature Synthesis of All-Inorganic Perovskite Nanocrystals for UV-Photodetectors

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Figure S1. Absorbance (a) and photoluminescence (PL) (b) spectra of solutions of CsPb$_{0.966}$Sn$_{0.034}$Br$_3$ (black) and CsPbBr$_3$ (red) nanocrystals obtained under identical conditions at 135 °C.
Figure S2. Morphology revealed by HAADF-STEM image of nanocrystals without Sn synthesized at 135 °C.
Figure S3. Cross section SEM image to show the thickness of each layer of the device.
Figure S4. J-V curves measured under dark and illumination of 100 mW/cm².
Figure S5. Bias-free EQE as a function of wavelength collected at 0 V.
Figure S6. Absorbance of C$_{60}$, PC$_{60}$BM, and CsPb$_{0.966}$Sn$_{0.034}$Br$_3$ nanocrystal films.
Figure S7. the EQE curves at 0 to -4 V acquired from the device with an architecture of ITO/PEDOT:PSS/PVK/CsPb$_{0.966}$Sn$_{0.034}$Br$_3$: PMMA/PC$_{60}$BM/C$_{60}$/BCP/Al.
**Figure S8.** Variation of EQE curves with changing bias from 0 to -6 V acquired from the Sn-free nanocrystal based device.
Figure S9. Variation of photoresponsivity curves with changing bias from 0 to -9 V.
Table S1. Summary of growth temperature, doping ratio, nanocrystal size, and standard deviation for each condition

<table>
<thead>
<tr>
<th>Sample</th>
<th>Temperature (℃)</th>
<th>Doping ratio (x%)</th>
<th>Size±standard deviation (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CsPb_{1-x}Sn_xBr_3</td>
<td>105</td>
<td>0</td>
<td>6.2±1.9</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>2.4</td>
<td>6.8±3.9</td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>3.4</td>
<td>7.4±2.1</td>
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<tr>
<td></td>
<td>150</td>
<td>0</td>
<td>8.3±4.8</td>
</tr>
<tr>
<td>CsPbBr_3</td>
<td>135</td>
<td>0</td>
<td>7.6±3.4</td>
</tr>
</tbody>
</table>