Supplementary Information

Changing the Shape and Optical Properties of CsPbBr\textsubscript{3} Perovskite Nanocrystals with Hydrohalic Acids Using a Room-Temperature Synthesis Process

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**Figure S1** XRD pattern of CsPbBr$_3$ nanocubes indicate orthorhombic crystal lattice

**Figure S2.** Particle size distribution histograms of CsPbBr$_3$ nanocubes
**Figure S3.** Particle size distribution histograms (a, b, and c) of CsPbBr$_3$ NCs synthesized with 3, 6 and 9 μL HCl additive, (d, e, and f) of CsPbBr$_3$ NCs synthesized with 3, 6 and 9 μL HBr additive.

**Figure S4** XRD patterns of CsPbBr$_3$ NCs with different amounts of hydrohalic acids additive. The asterisk indicates peaks of Cs$_4$PbBr$_6$, and the triangle indicates peaks of CsPb$_2$Br$_5$.\(^1\)
Figure s5. HRTEM of (a) 6 μL HBr-based QDs, CsPbBr$_3$ QDs possessed a orthorhombic a interplanar distance of 0.26 nm along the crystalline direction (-210), (b) 6 μL HCl-based QDs, interplanar distance of 0.293 nm, corresponding to (002) crystal faces, (c) 6 μL HI-based NSs, interplanar distance of 0.58 nm corresponding to (001) crystal faces and STEM of (d) 9 μL HI-based NSs
Figure s6. Survey XPS spectra of 9 μL HI-based CsPbBr$_3$ (red lines), 0 μL HX-based CsPbBr$_3$ (green lines), and 6 μL HCl-based CsPbBr$_3$ (blue lines). The C 1s peaks of adventitious carbon is setted to 284.8 eV.
Figure s7. (a) Structure of oleylamine (OAm) and oleic acid (OA). (b) Selected regions of the $^1$H NMR spectra of a mixture of OAm, OA, and HBr solutions in CDCl$_3$. 
Figure s8. FTIR spectra of (from top to bottom; as indicated by different colors on the frame): OA and OAm ligands, 6 μLHI-based CsPbBr$_3$, 6μLHI-based CsPbBr$_3$, 6μLHI-based CsPbBr$_3$

REFERENCE
