**SUPPORTING INFORMATION**

Optical and Electrical Characteristics of Lead-Free Cu-based Halide Perovskites in Electrospun Polystyrene Nanofibers

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| --- | --- |
| (a) | (b) |
| (c) | |

**Figure S1.** The (a) XRD, (b) FTIR, and (c) Raman spectra of Cs3Cu2I5, CsCu2I3, and polystyrene nanofibers.

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| --- | --- |
| (a) | |
| (c) | (d) |

**Figure S2.** Rietveld refinement of XRD graphs. (a) CsCu2I3-PS nanofibers (5% PS), (b) Cs3Cu2I5-PS nanofibers (5% PS) (c) CsCu2I3-PS nanofibers (25% PS), and (d) Cs3Cu2I5-PS nanofibers (25% PS). Refinement was performed with Profex software package.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (a) | |  |  |  | | --- | --- | --- | | **3rd**  **1st** |  |  | |  |  | **4th** | | **5th** | | |   (b) |
| (c) | |  |  |  | | --- | --- | --- | | **1st** |  |  | | **3rd** |  | **2nd**  **4th** | | **5th** | | |   (d) |

**Figure S3.** (a) Raman spectra at 5 different area points of CsCu2I3-PS nanofiber (5% PS). (b) Morphology profiles at 5 different area points for Raman measurements of CsCu2I3-PS nanofiber (5% PS), (a) Raman spectrum at 5 different area points of Cs3Cu2I5-PS nanofiber (5% PS). (b) Morphology profiles at 5 different area points for Raman measurements of Cs3Cu2I5-PS nanofiber (5% PS).

|  |  |
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| (a) | (b) |

**Figure S4.** SEM image. (a) Cs3Cu2I5-PS nanofiber (5% PS). (b) Cs3Cu2I5-PS nanofiber (5% PS).

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| a) | b) |
| c) | d) |

**Figure S5.** Experimental bandgaps using Elliot fitting. (a) CsCu2I3-PS (5% PS), (b) CsCu2I3-PS (25% PS), (c) Cs3Cu2I5-PS (5% PS), (d) Cs3Cu2I5-PS (25% PS).