Electronic Supplementary Material (ESI) for Materials Advances.

Electronic Supplementary Information

Hybrid organic-inorganic perovskites as microwave radiation switches

Olesia I. Kucheriv, [a] Viktor V. Oliynyk, [b] Volodymyr V. Zagorodnii,[b] Vilen L. Launets,[b] Igor O. Fritsky,[a] and Il'ya A. Gural'skiy *[a]

[a]Department of Chemistry, Taras Shevchenko National University of Kyiv, 64 Volodymyrska St., Kyiv 01601, Ukraine.

E-mail: illia.guralskyi@univ.kiev.ua

[b]Educational and Scientific Institute of High Technologies, Taras Shevchenko National University of Kyiv, 64 Volodymyrska St., Kyiv 01601, Ukraine

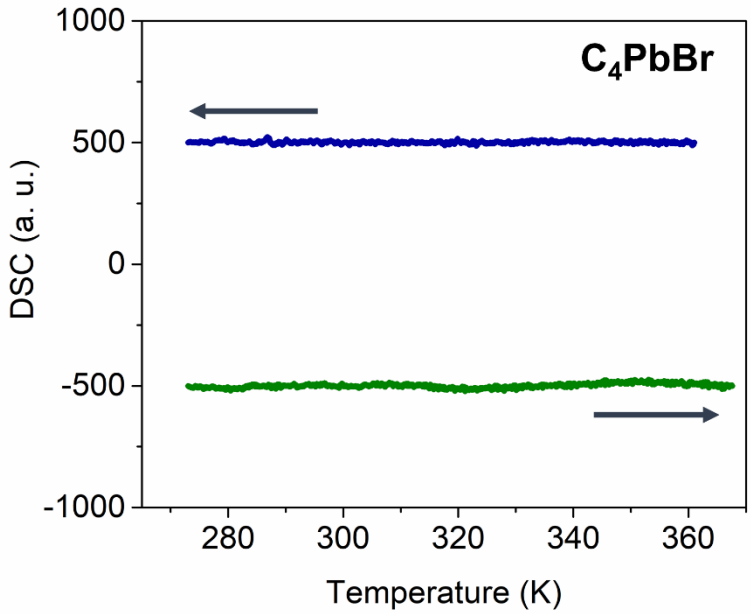

Figure S1. DSC curve of **C_4PbBr** showing the absence of phase transition in the studied temperature range.

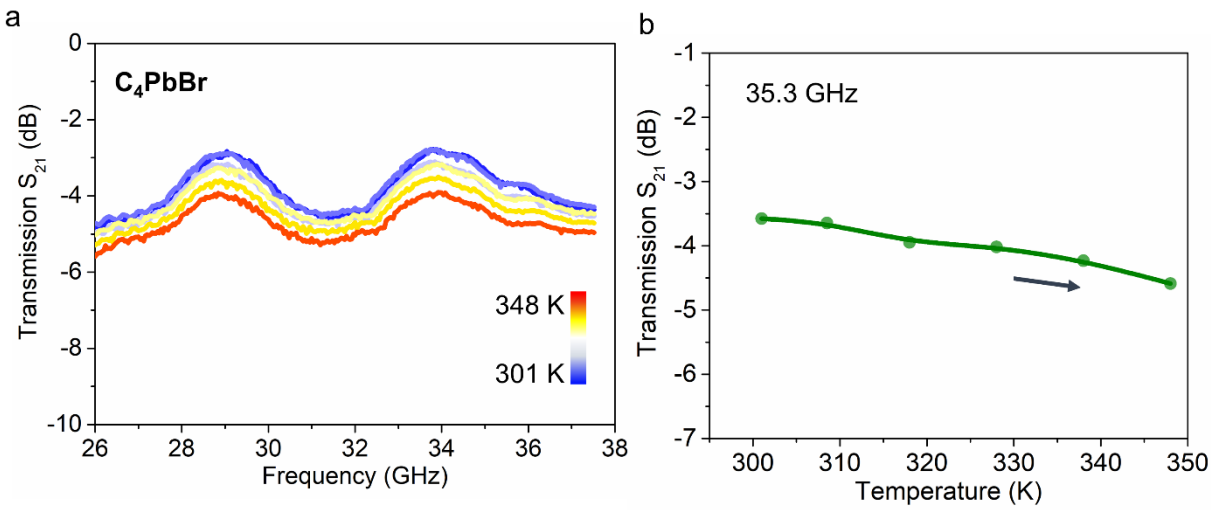

Figure S2. (a) Spectral variation of microwave radiation transmission (dB) for **C_4PbBr** with temperature obtained in the matched waveguide at heating. Extracted values of transmission vs. temperature for **C_4PbBr** (b) at 35.3 GHz frequency. These curves demonstrate a slight drift of microwave radiation transmission upon heating.

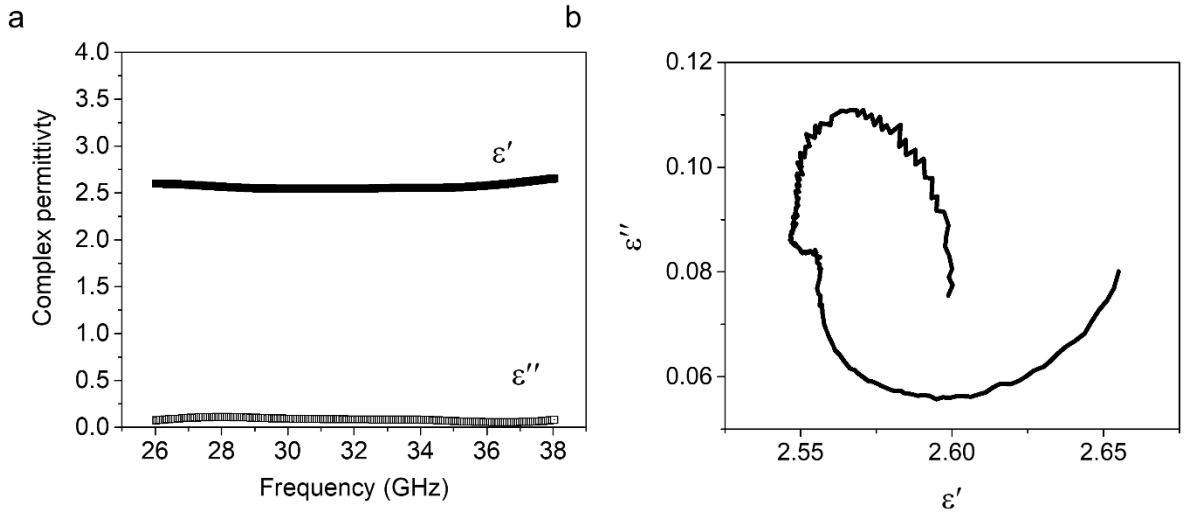

Figure S3. (a) Dependence of complex permittivity (ε' and ε") of PMMA on frequency. (b) Cole-Cole plots for PMMA in 26 – 38 GHz frequency range.

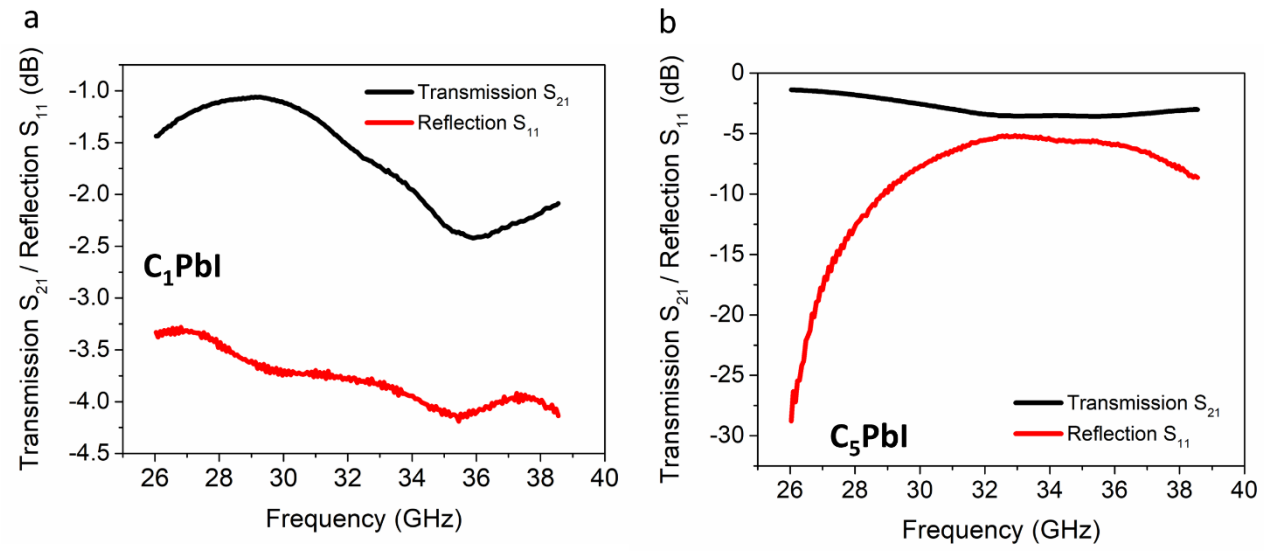

Figure S4. Transmission / reflection spectra of **C_1PbI** (a) and **C_5PbI** (b), obtained with VNA at room temperature.

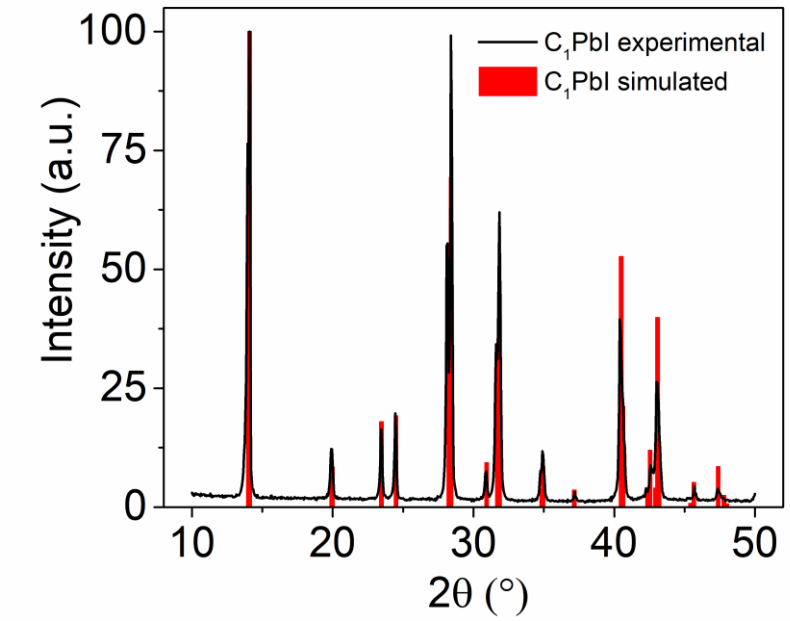

Figure S5. Experimental PXRD pattern of **C_1PbI** and a pattern simulated from single crystal structure (295 K).[1]

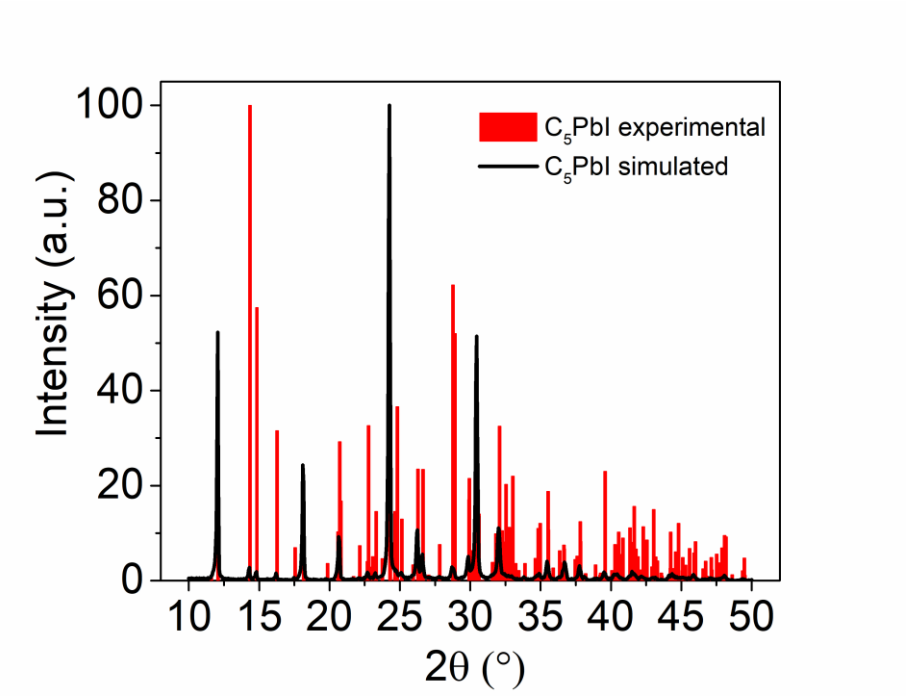

Figure S6. Experimental PXRD pattern of **C_5PbI** and a pattern simulated from single crystal structure (293 K).[2] Mismatch of peaks intensities is associated with strong preferential orientation in the sample.

References:

[1] Y. Ren, I. W. H. Oswald, X. Wang, G. T. McCandless, J. Y. Chan, *Cryst. Growth Des.* **2016**, *16*, 2945–2951.

[2] D. G. Billing, A. Lemmerer, *Acta Crystallogr. Sect. B Struct. Sci.* **2007**, *63*, 735–747.