

**Supporting information for: “Beyond Quantum Confinement: Excitonic Nonlocality
in Halide Perovskite Nanoparticles with Mie Resonances”**

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1. DIELECTRIC PERMITTIVITY FOR PEROVSKITE NANOPARTICLE WITH NONLOCAL AND QUANTUM CONFINEMENT CONTRIBUTIONS

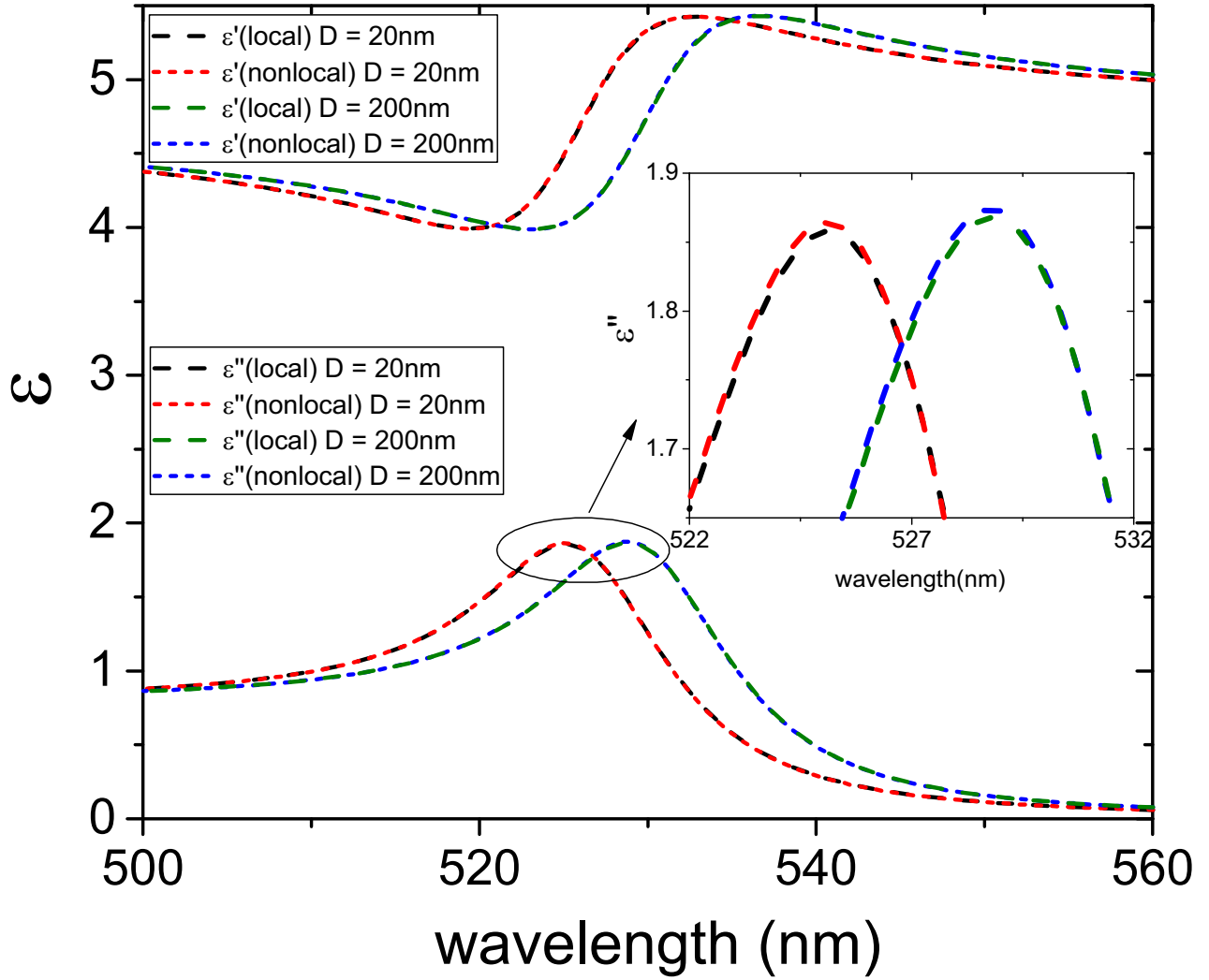


Figure S1. Calculated spectral dependencies of the real and the imaginary parts of the dielectric permittivity for MAPbBr₃ perovskite spherical nanoparticle with diameters $D=200$ nm $D=20$ nm in local (green and black dashed lines) and nonlocal (blue and red dashed lines) cases. In the local case, permittivity have been calculated by using Eq.(3) with $k=0$. In the nonlocal case, permittivity have been calculated by Eq.(3) with $k_0 = \sqrt{\epsilon_{loc}(\omega)} \times \omega/c$, where $\epsilon_{loc}(\omega)$ is the permittivity in the local case.

2. MODES DECOMPOSITION FOR A PEROVSKITE NANOPARTICLE

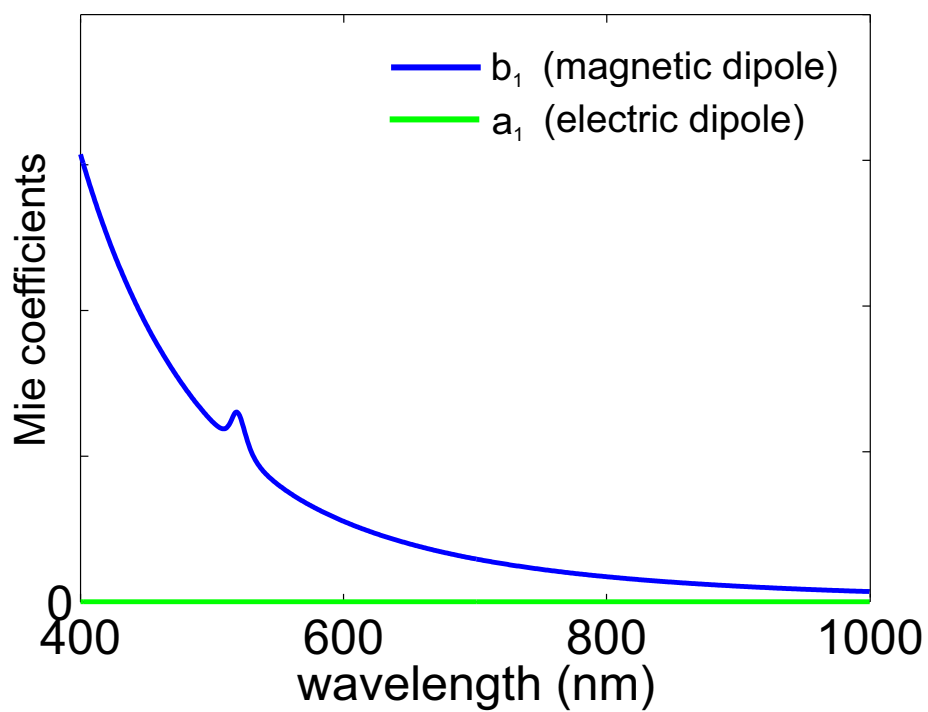


Figure S2. Spectral dependencies of the first Mie coefficients calculated without nonlocality for MAPbBr₃ perovskite spherical nanoparticle with diameter $D=20$ nm.

3. COMPARISON OF THE MIE THEORY OF THE SPATIALLY DISPERSIVE DIELECTRIC SPHERES WITH DATA FOR OTHER COMPOSITIONS OF THE PEROVSKITES

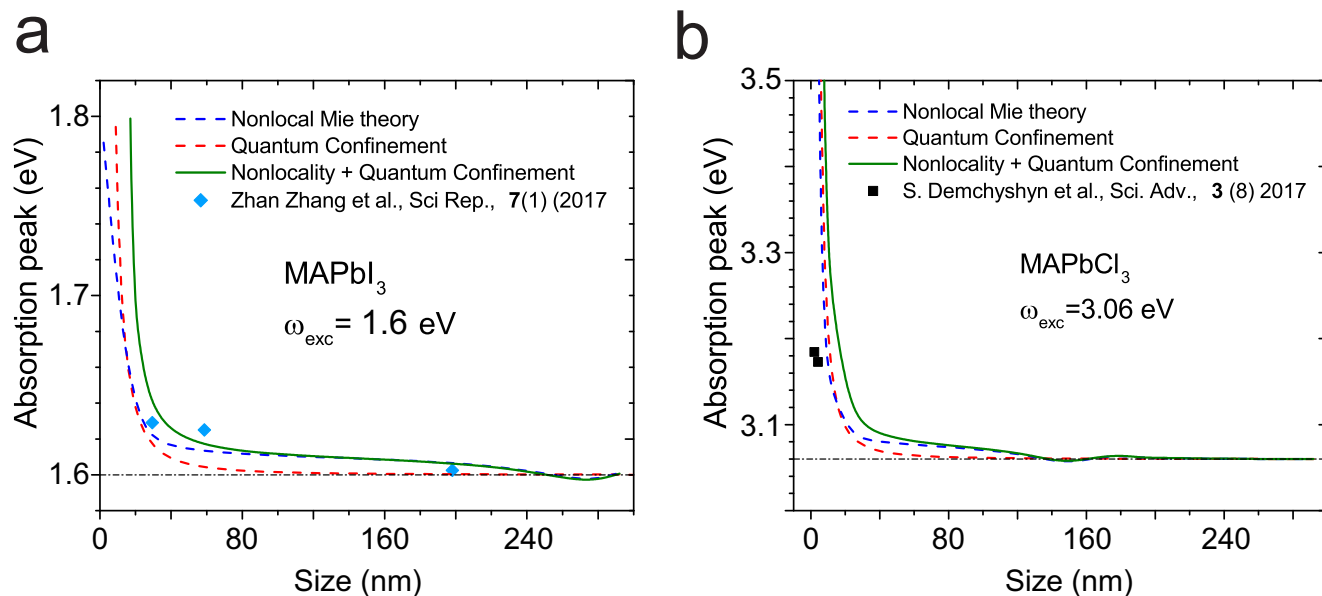


Figure S3. Calculated dependencies of absorption cross section blue shift related to nonlocality in MAPbI₃ (a) and MAPbCl₃ (b) perovskite spherical nanoparticles. Dots correspond to experimental values from the given references.