Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary information for

Lattice relaxation effect on collective resonance spectra of a finite dipole array

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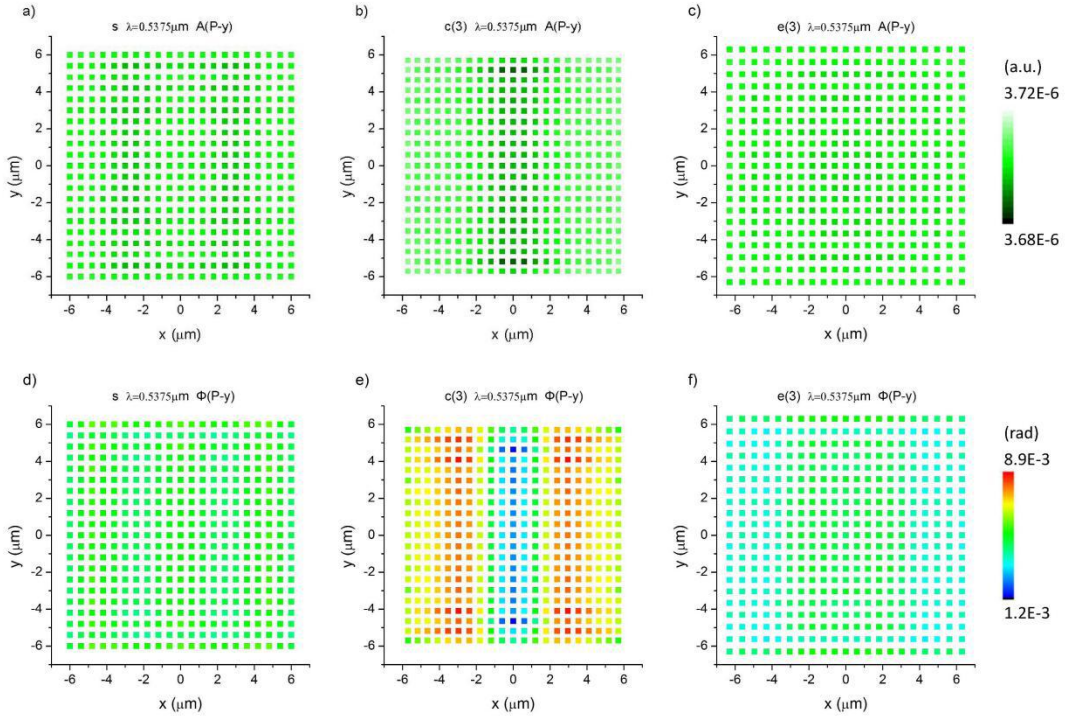

Fig. S1 P-y amplitude (A) and phase (P) distribution of the pristine (s), contracted [c(3)] and expanded [e(3)] array in Fig. 2. The excitation plane wave is y-direction linear polarized, +z direction transmitting with wavelength of 0.5375 μ m. a-c) and d-f) share the same color scale bar respectively.

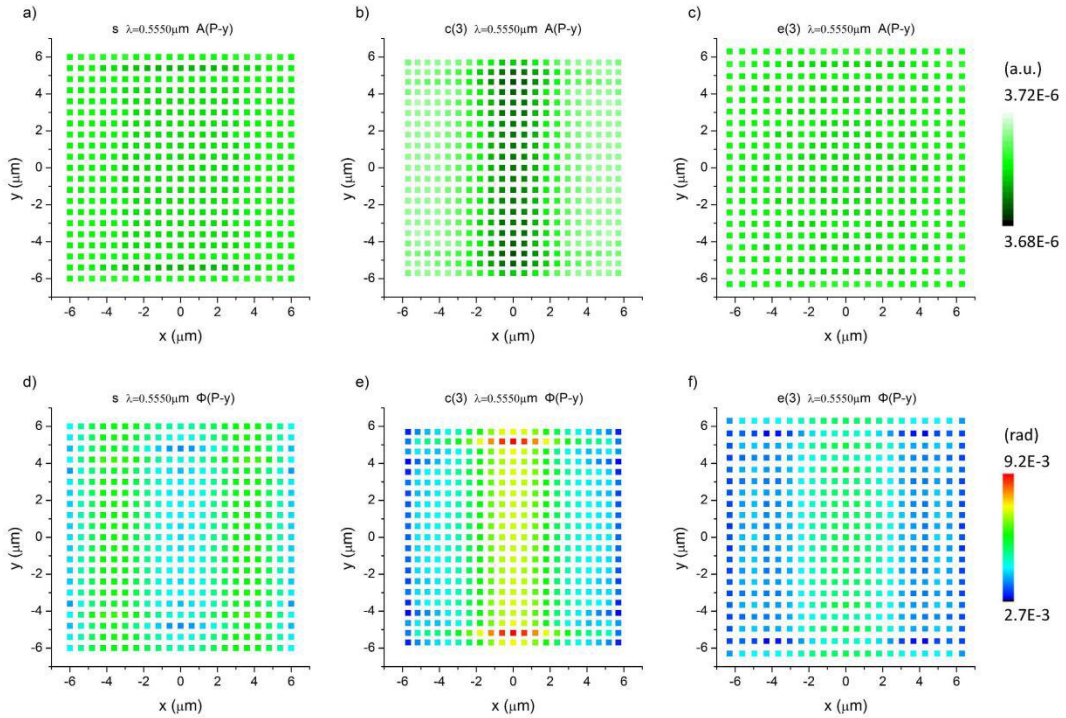

Fig. S2 P-y amplitude (A) and phase (P) distribution of the pristine (s), contracted [c(3)] and expanded [e(3)] array in Fig. 2. The excitation plane wave is y-direction linear polarized, +z direction transmitting with wavelength of 0.5550 μ m. a-c) and d-f) share the same color scale bar respectively.

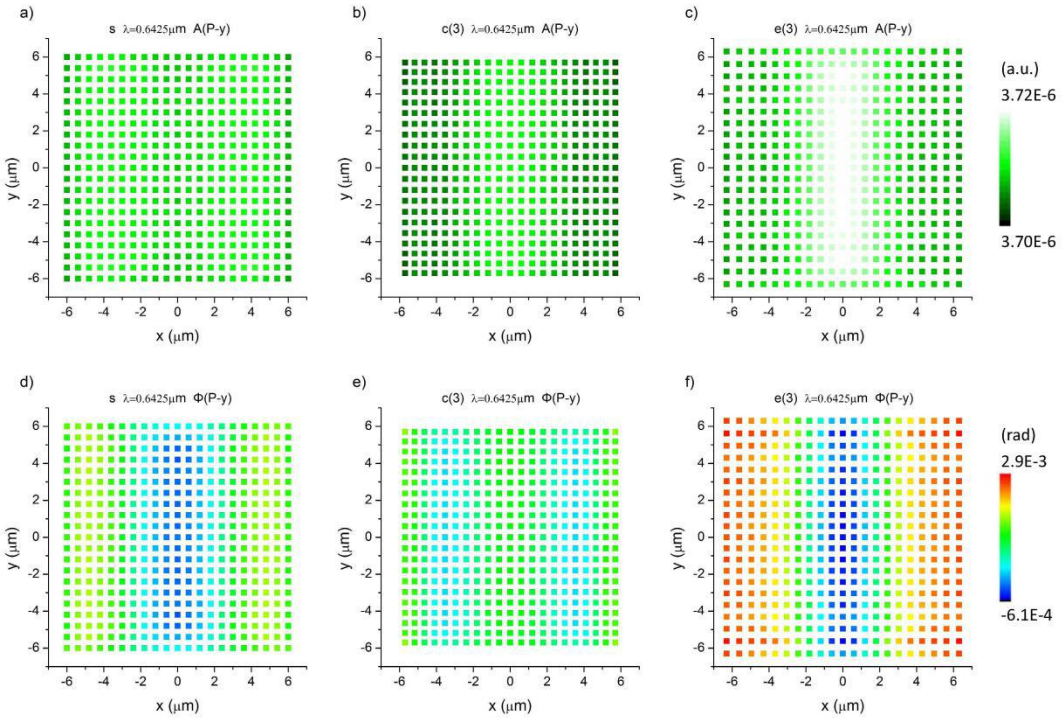

Fig. S3 P-y amplitude (A) and phase (P) distribution of the pristine (s), contracted [c(3)] and expanded [e(3)] array in Fig. 2. The excitation plane wave is y-direction linear polarized, +z direction transmitting with wavelength of 0.6425 μ m. a-c) and d-f) share the same color scale bar respectively.

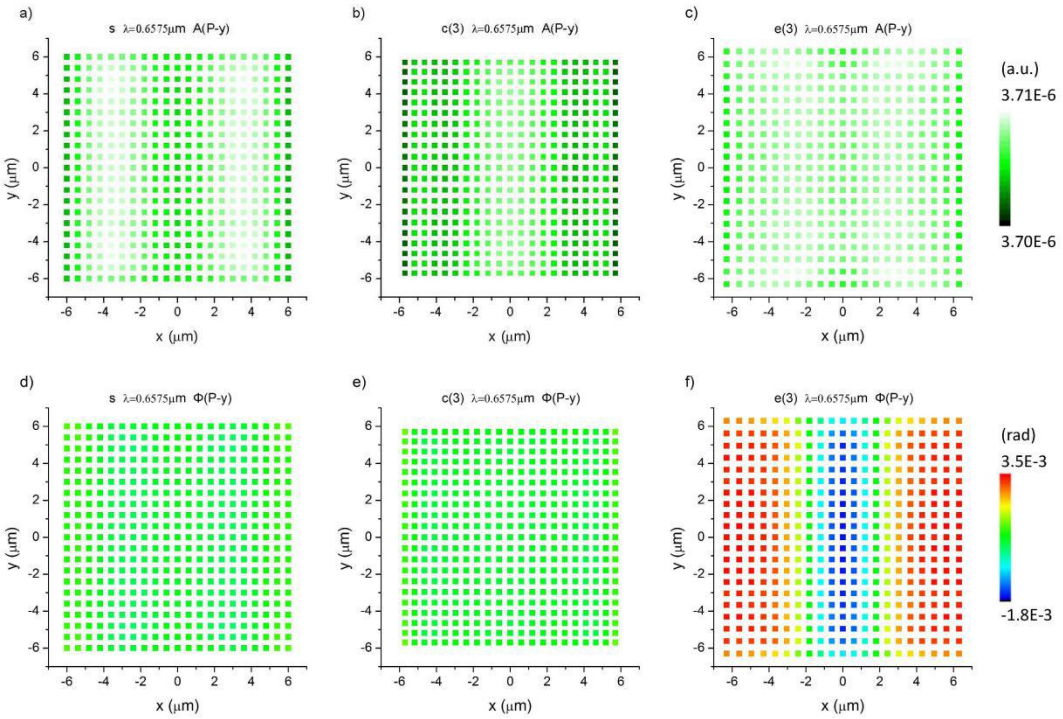

Fig. S4 P-y amplitude (A) and phase (P) distribution of the pristine (s), contracted [c(3)] and expanded [e(3)] array Fig. 2. The excitation plane wave is y-direction linear polarized, +z direction transmitting with wavelength of 0.6575 μ m. a-c) and d-f) share the same color scale bar respectively.

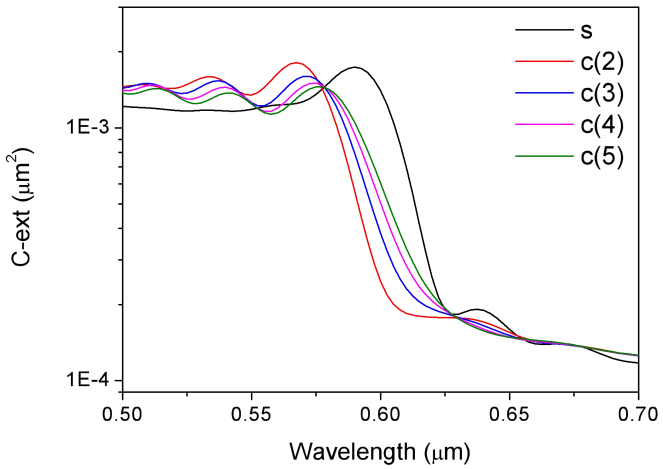

Fig. S5 Extinction spectra of pristine and relaxed array. s: pristine. The pristine array is a 21*21 square with a = 0.6 μ m, and the lattice element is sphere (r=23.26nm, n=1.5). c(p): contracted array according to a p-order polynomial. s and c(3) in Fig. 2 are also given for comparison. The environment is vacuum.

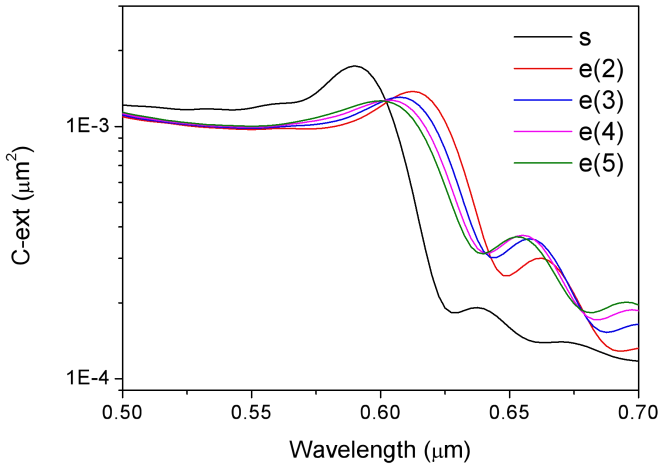

Fig. S6 Extinction spectra of pristine and relaxed array. s: pristine. The pristine array is a 21*21 square with a = 0.6 μ m, and the lattice element is sphere (r=23.26nm, n=1.5). e(p): expanded array according to an p-order polynomial. s and e(3) in Fig. 2 are also given for comparison. The environment is vacuum.

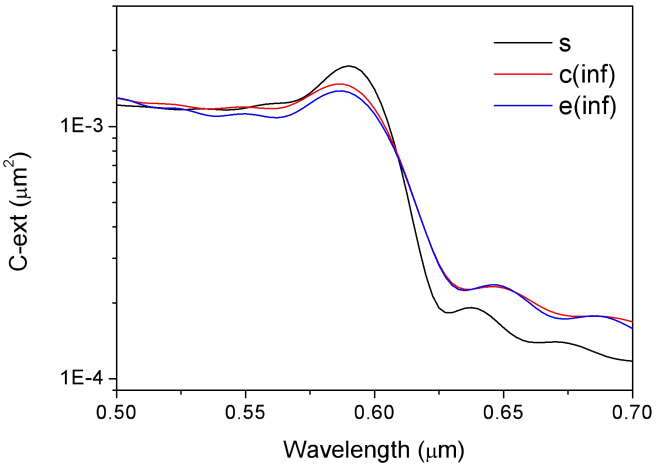

Fig. S7 Extinction spectra of pristine and relaxed array. s: pristine result shown in Fig. 2. The pristine array is a 21*21 square with a = 0.6 μ m, and the lattice element is sphere (r=23.26nm, n=1.5). c(inf), e(inf): the "hard" contracted and expanded array equivalent to an infinite-order polynomial in Eq. 10. The environment is vacuum.