SUPPLEMENTARY INFORMATION

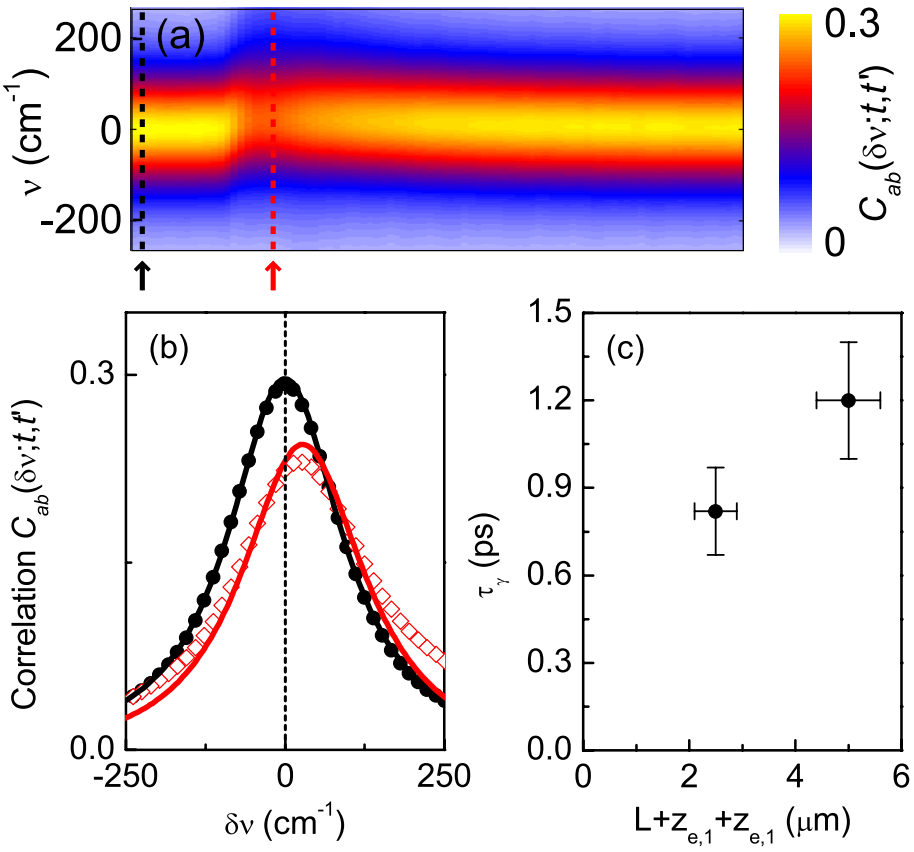

FIG. 1: (color online) (a) Map of experimental correlation $C_{ab}(\nu; t, t')$ for sample 1. (b) Cross sections of (a) at delay times of -3 ps (dots, black),and 1 ps (diamonds, red). Lines represent fits, without (black) and with (red line) dephasing model with $\tau_\gamma = 0.82 \pm 0.15$ ps and $D = 13.6 \pm 2$ m^2/s. (c) Values of τ_γ against effective slab thickness $L + z_{e,1} + z_{e,2}$ for samples 1 and 2.

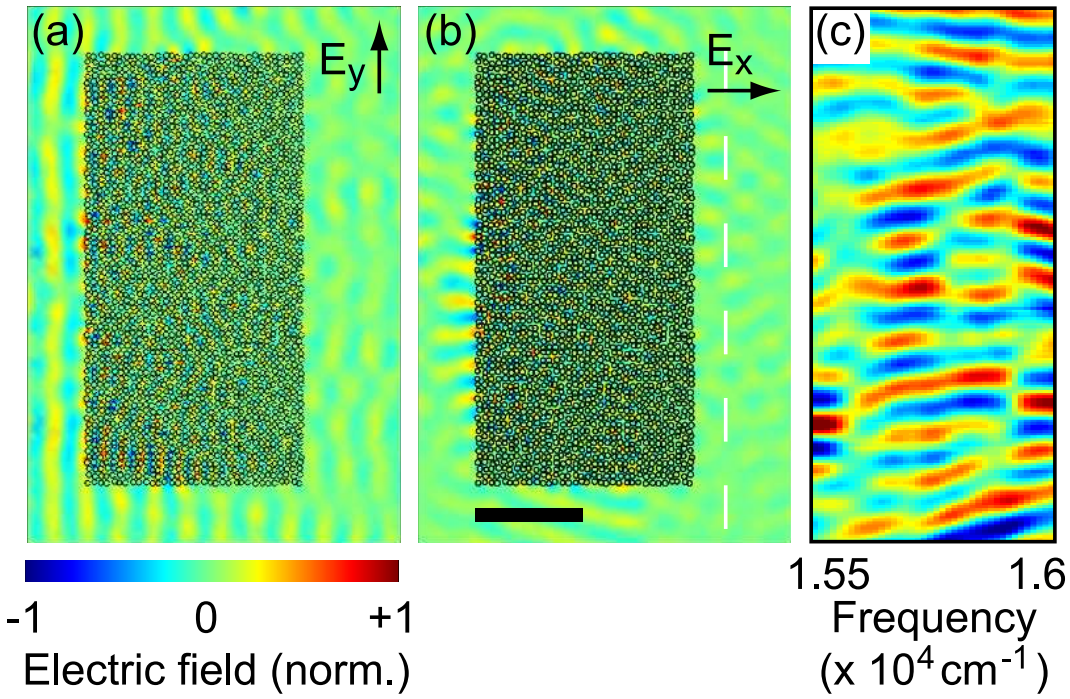

FIG. 2: COMSOL model of a 2D random medium. Scattering cylinders have a diameter of 100 nm with random variations of ±10 nm; filling factor is 50%. (a,b) Calculated electric fields from numerical finite-element model (COMSOL) for a random slab of scatterers for polarizations parallel E_y (a) and perpendicular (b) E_x to the incident light. Scale bar, 2 μm. (c) Electric field E_x against frequency, 0.5 μm from the exit surface of the slab (dashed line in b).