Electronic Supplementary Material (ESI) for Nanoscale Horizons.

Supporting Information for

Active tuning Fano resonance from Si nanosphere dimer by substrate effect

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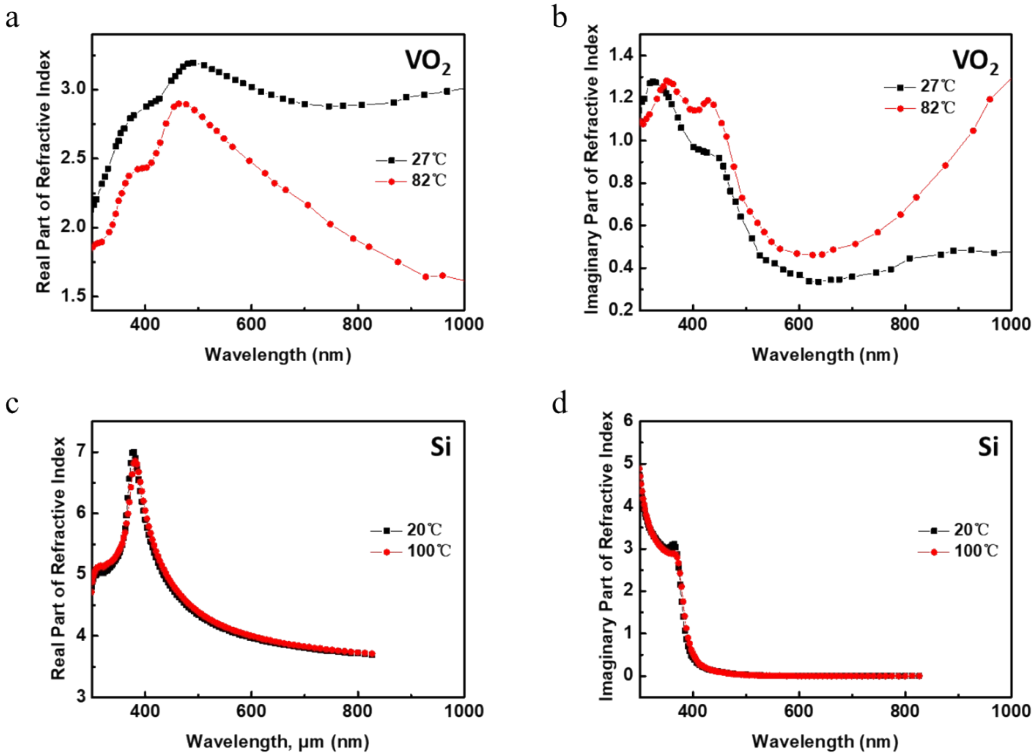

Fig. S1 The complex refractive index of VO_2 and Si used in this work. (a) The real and (b) imaginary part of the refractive index of VO_2 at 27°C and 82°C. (c) The real and (d) imaginary part of the refractive index of Si at 20°C and 100°C. Comparing the refractive index at low and high temperature, VO_2 only undergoes a little change and Si keeps almost unchanged in the visible region.

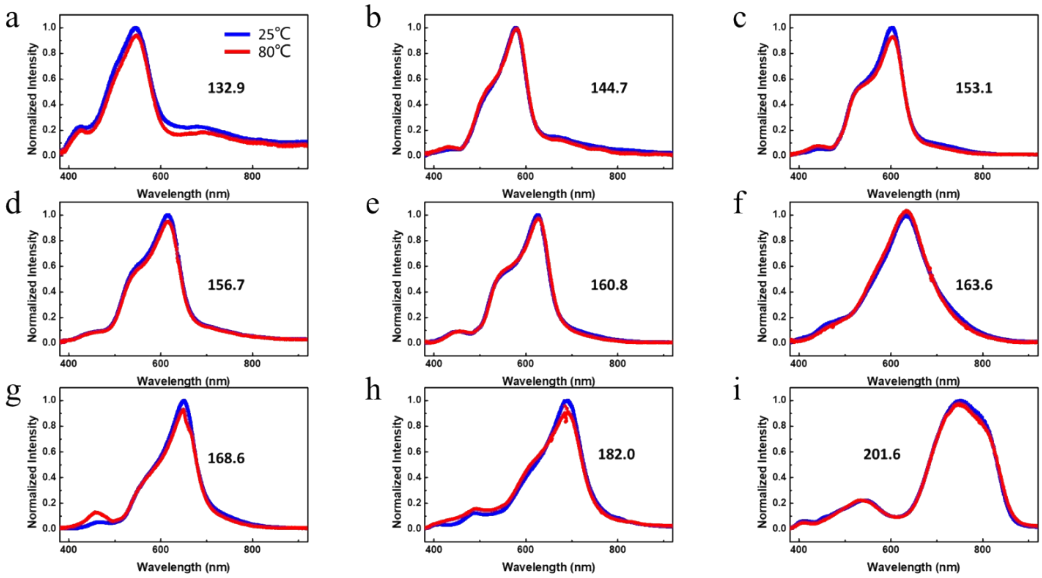

Fig. S2 Contact experiment for studying the properties of Si nanospheres with different diameter on the SiO_2 substrate under 25°C and 80°C. The diameter of Si nanospheres range from 132.9 nm to 201.6 nm. The spectra under different temperature nearly overlap for each particle.

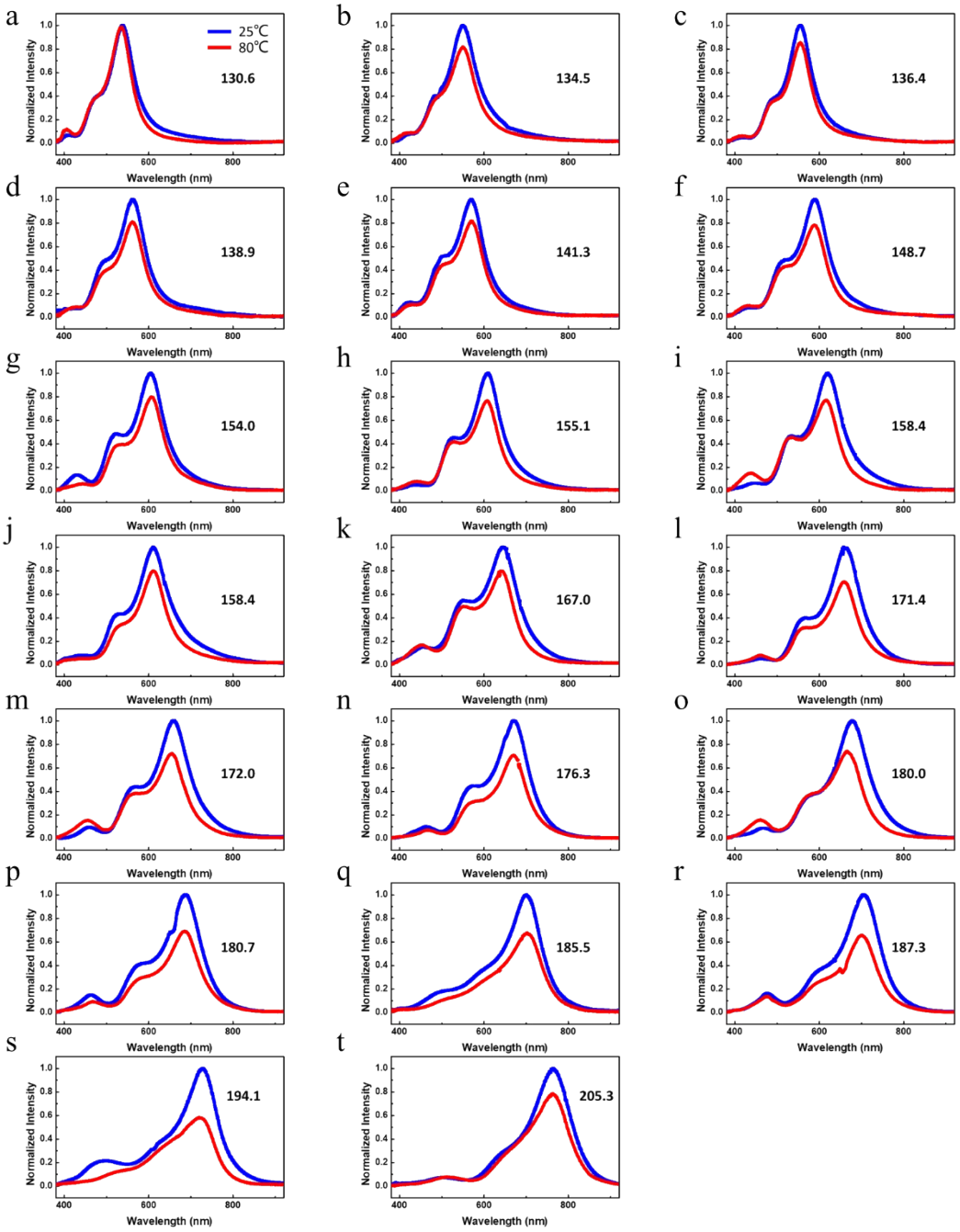

Fig. S3 Measured backward scattering spectra of a single Si nanosphere with different diameter on the VO_2 layer under 25°C and 80°C. The diameter of Si nanospheres range from 130.6 nm to 205.3 nm.

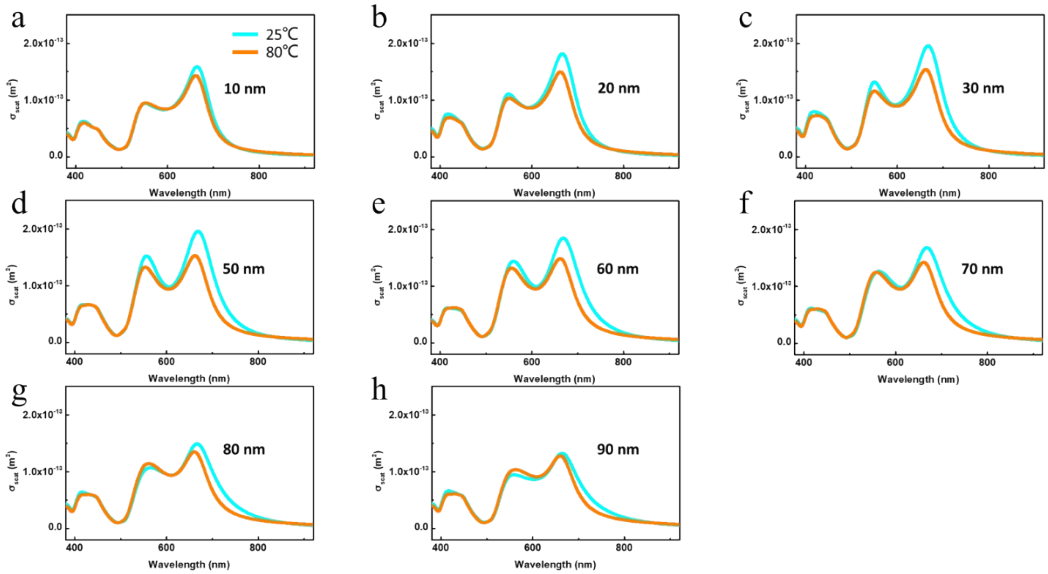

Fig. S4 Calculated backward scattering spectra of a single Si nanosphere with a diameter of 170 nm on the VO_2 layer with a different thickness under 25°C and 80°C. The thickness of VO_2 layer varies from 10 nm to 90 nm.

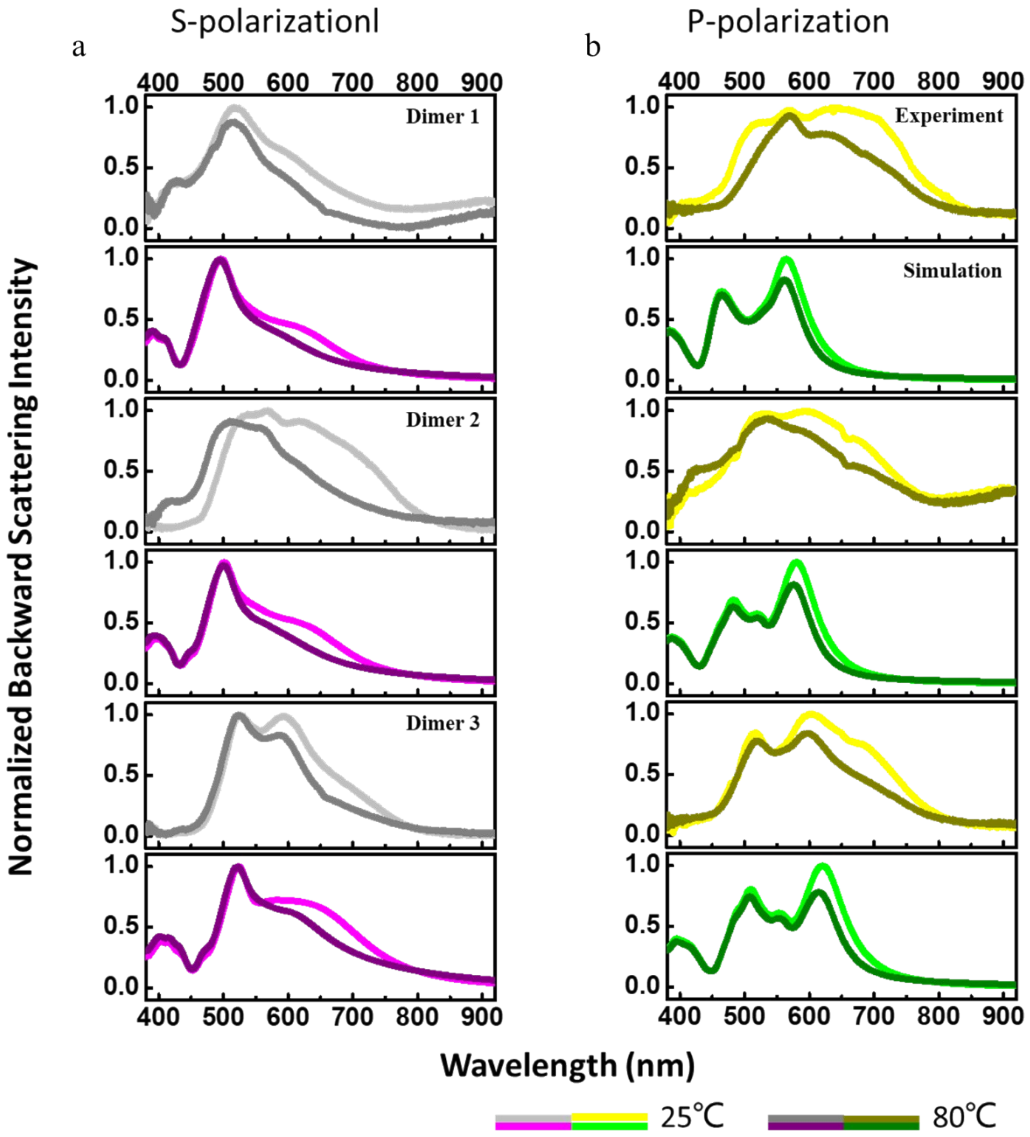

Fig. S5 Measured and simulated normalized backward scattering spectra of a Si nanosphere dimer with different size on the VO_2 layer irradiated by S-polarized and P-polarized incident light under 25°C and 80°C.These spectra show a uniform trend compared with that obtained by using non-polarized light.