crystals

MDPI

Supplementary Materials

Broadband Active Control of Transverse Scattering from All-Dielectric Nanoparticle

Huiwen Yu [1,2,†], Hongjia Zhu [1,2,†], Jinyang Li [1,2], Zhaolong Cao [1,2,*] and Huanjun Chen [1,2]

[1] School of Electronics and Information Technology, Sun Yat-sen University, Guangzhou 510275, China; yuhw3@mail2.sysu.edu.cn (H.Y.); zhuhj3@mail2.sysu.edu.cn (H.Z.); lijy293@mail2.sysu.edu.cn (J.L.); chenhj8@mail.sysu.edu.cn (H.C.)

[2] State Key Lab of Optoelectronic Materials and Technologies, Guangdong Province Key Laboratory of Display Material and Technology, Sun Yat-sen University, Guangzhou 510275, China

* Correspondence: caozhlong@mail.sysu.edu.cn

† These Authors Contributed Equally.

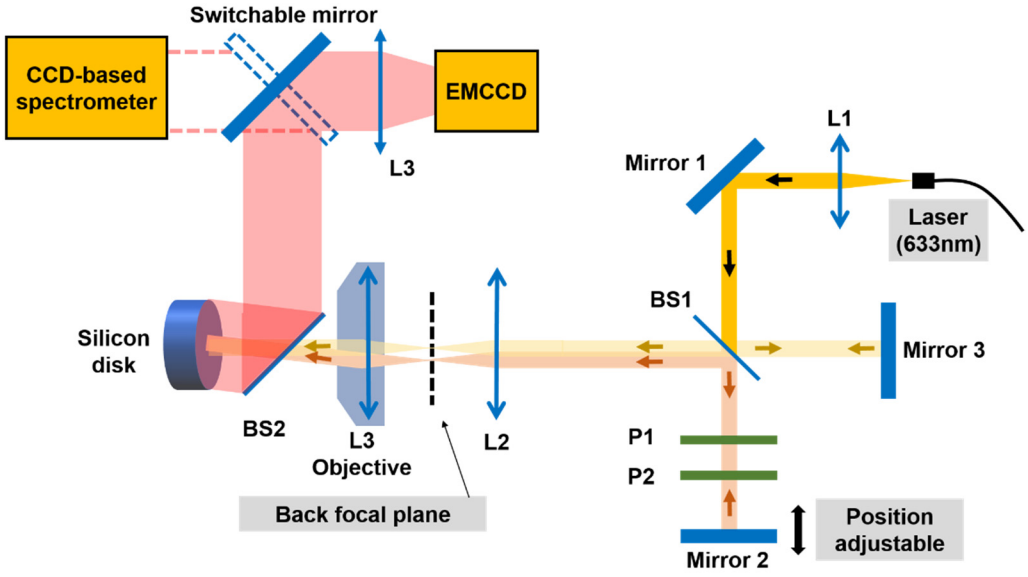

Figure S1. Schematic of the coherent excitation configuration. A typical coherent excitation setup can be realized by incorporating the Fourier space microscopy with an interferometer setup. The collimated beam is first routed into the Michelson interferometer and split into two coherent waves. The relative phase and amplitude between coherent beams can be adjusted by rotatable polarizers P1, P2, and movable mirror Mirror 2. The coherent waves are then focused onto the back focal plane of a high numerical aperture objective L3 and are output from the lens at well-defined incident angles. After coherent interaction with the nanodisk, the scattered waves are collected by the same objective for spectrum or far-field scattering measurements.

Citation: Yu, H.; Zhu, H.; Li, J.; Cao, Z.; Chen, H. Broadband Active Control of Transverse Scattering from All-Dielectric Nanoparticle. *Crystals* **2021**, *11*, 920. https://doi.org/10.3390/cryst11080920

Academic Editor: Borislav Angelov

Received: 14 July 2021
Accepted: 4 August 2021
Published: 7 August 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

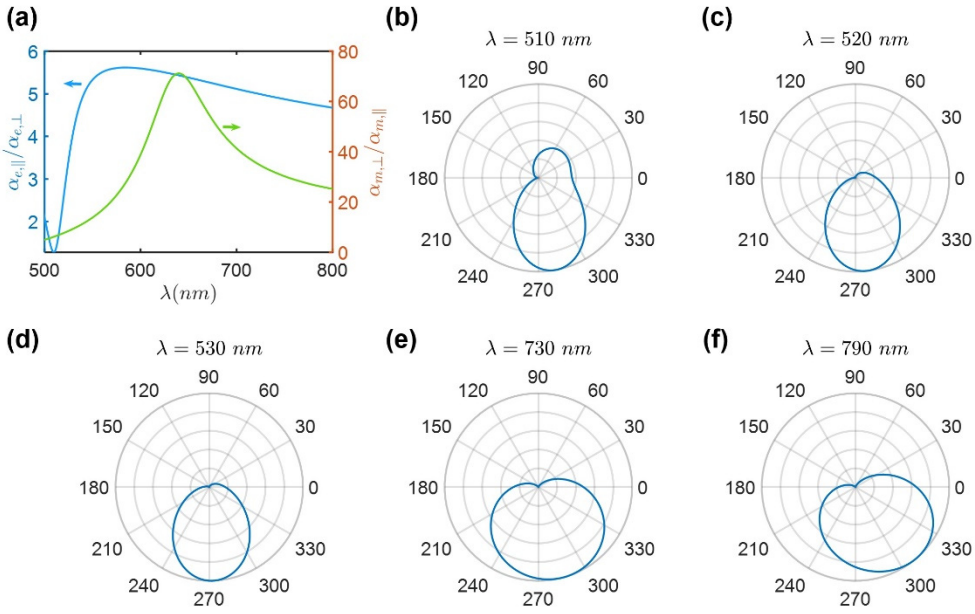

Figure S2. Capability test of the coherent control approach. (**a**) The polarizability ratios $\alpha_{e,\|}/\alpha_{e,\perp}$ and $\alpha_{m,\perp}/\alpha_{m,\|}$. (b-f) The far-field radiation pattern of the silicon nanodisk under $v_T(0)$ excitation at λ = 510 (**b**), 520 (**c**), 530 (**d**), 730 (**e**), and 790 nm (**f**), respectively.