Optical Engineering

SPIEDigitalLibrary.org/oe

Response to "Comment on the paper 'Electromagnetic modeling of ellipsoidal nanoparticles for sensing applications'"

Luigi La Spada
Renato Iovine
Lucio Vegni

SPIE

COMMUNICATION

Response to "Comment on the paper 'Electromagnetic modeling of ellipsoidal nanoparticles for sensing applications'"

Luigi La Spada
Renato Iovine
Lucio Vegni
Roma Tre University
Department of Applied Electronics
84 Via della Vasca Navale, Rome, Italy
E-mail: luigi.laspada@uniroma3.it

Abstract. The authors respond to the comments by Mackay and Lakhtakia. [DOI: 10.1117/1.OE.52.7.079702]

First of all, we would like to thank Mackay and Lakhtakia[1] who have carefully read our paper and for their valuable comments on our manuscript. We agree that the polarizability is a dyadic.

For our aims (analytical models, full-wave simulations, and sensitivity analysis), we have assumed the impinging electromagnetic field as a plane wave having the electric field **E** parallel to the nanoparticle principal axis (x-axis as depicted in the Fig. 1 of the paper). In this case, Eq. (1) and the following equations refer only to scalar component $\hat{x}\,\hat{x}$ of the dyadic polarizability $\underline{\alpha}$ (sufficient to evaluate the nanoparticle response under the aforementioned excitation condition).

We have to point out that for sensing applications the analyzed polarization is crucial in order to obtain the best sensitivity performances.

References

1. T. G. Mackay and A. Lakhtakia, "Comment on the paper 'Electromagnetic modeling of ellipsoidal nanoparticles for sensing applications'," *Opt. Eng.* **52**(7), 079701 (2013).