

About the Resonances in Dielectric Janus Particles

B S LUK'YANCHUK¹, I V MININ², AND O V MININ²

¹*Faculty of Physics, M V Lomonosov Moscow State University, 119991, Moscow, Russia*

²*Tomsk Polytechnic University, 634050, Tomsk, Russia*

Contact Email: lukiyanchuk@nanolab.phys.msu.ru

Small spherical resonators have a low-quality factor (Q -factor) due to the leakage on the interface with a curvature. Recently, many efforts have been made to increase the Q -factor of spherical dielectric resonators using bound states in a continuum. Our research shows that the use of the Janus particles also contributes to an increase in the figure of merit and an increase in the electric and magnetic intensity components near the surface of the distant element of the particle. The effect is resonant in relation to the volume of the removed fraction of the substance and is observed in the size range R : 5–15 λ .

References

- [1] I V Minin, O V Minin, Y Cao, B Yan, Z Wang and B Luk'yanchuk, *Opto-Electron. Sci.* **1**, 210008 (2022)
- [2] B S Luk'yanchuk, A R Bekirov, Z B Wang, I V Minin, O V Minin and A A Fedyanin, *Phys. Wave Phenom.* **30**, in press

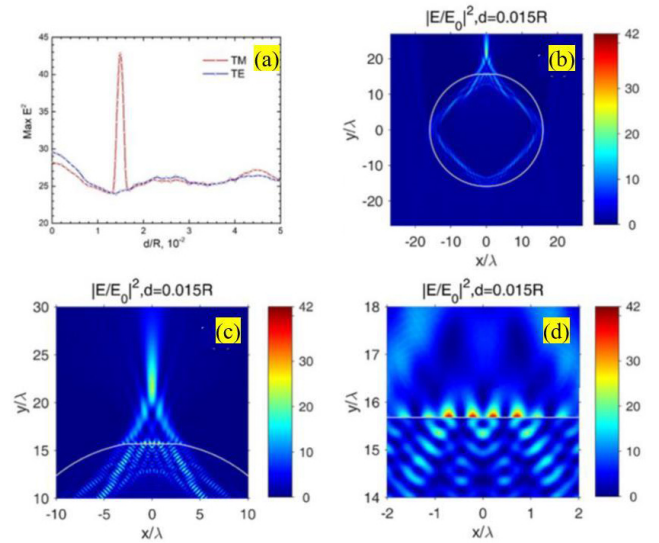


Figure 1: (a) Maximal field enhancement around the truncated cylindrical versus the depth of truncated element. Distribution of the field intensity for a resonant value of truncation (b) and zoom in (c) and further (d)