Our new paper in Sylwan Nano Journal

Congratulations for the publication of paper”Thermoplasmonic response of Au@SiO2 core–shell nanoparticles in deionized water and poly-vinylpyrrolidone matrix”

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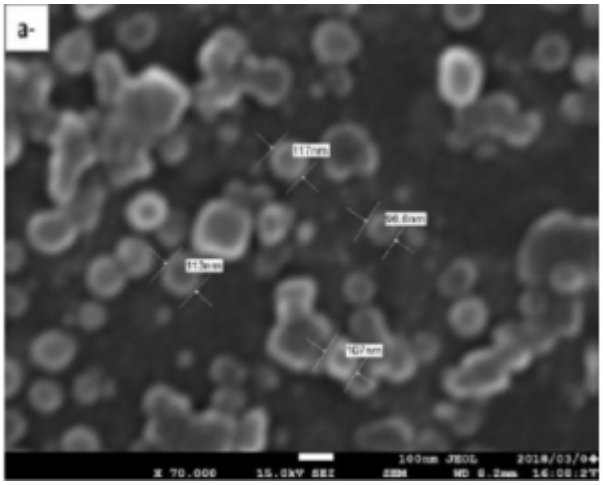
Metal-dielectric core–shell nanoparticles strongly absorb light and convert into an efficient localized heat source in the presence of electromagnatic radiation at their plasmonic resonance. This process can be enhanced depending on the size, shape, structure, and surrounding media. This study theoretically and experimentally investigated the thermoplasmonic effects of Au@SiO2 core–shell nanoparticles immersed in water and poly-vinylpyrrolidone prepared through laser ablation in liquid. Two lasers (532 nm cw Nd:YAG and 520 nm fs pulsed ytterbium fiber) were used to illuminate the prepared samples. The theoretical thermoplasmonic response of the samples was estimated based on the finite element method of COMSOL multiphysics V5.2a. The generated heat difference of Au@SiO2 in both media with fs pulsed laser irradiation was higher than that of cw laser regarding the power used due to the heat confinement during the time of the pulse that cannot be disspated. This study can serve as a basis for using plasmonic core–shell nanoparticles as a nanoheat source in medical applications.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