

# OPTICAL CHARACTERISTICS OF AU-AG NANOPARTICLES IN DEIONIZED WATER BY PULSED LASER ABLATION (PLAL) TECHNIQUE AT DIFFERENT TARGET DISTANCES FROM FOCAL POINT

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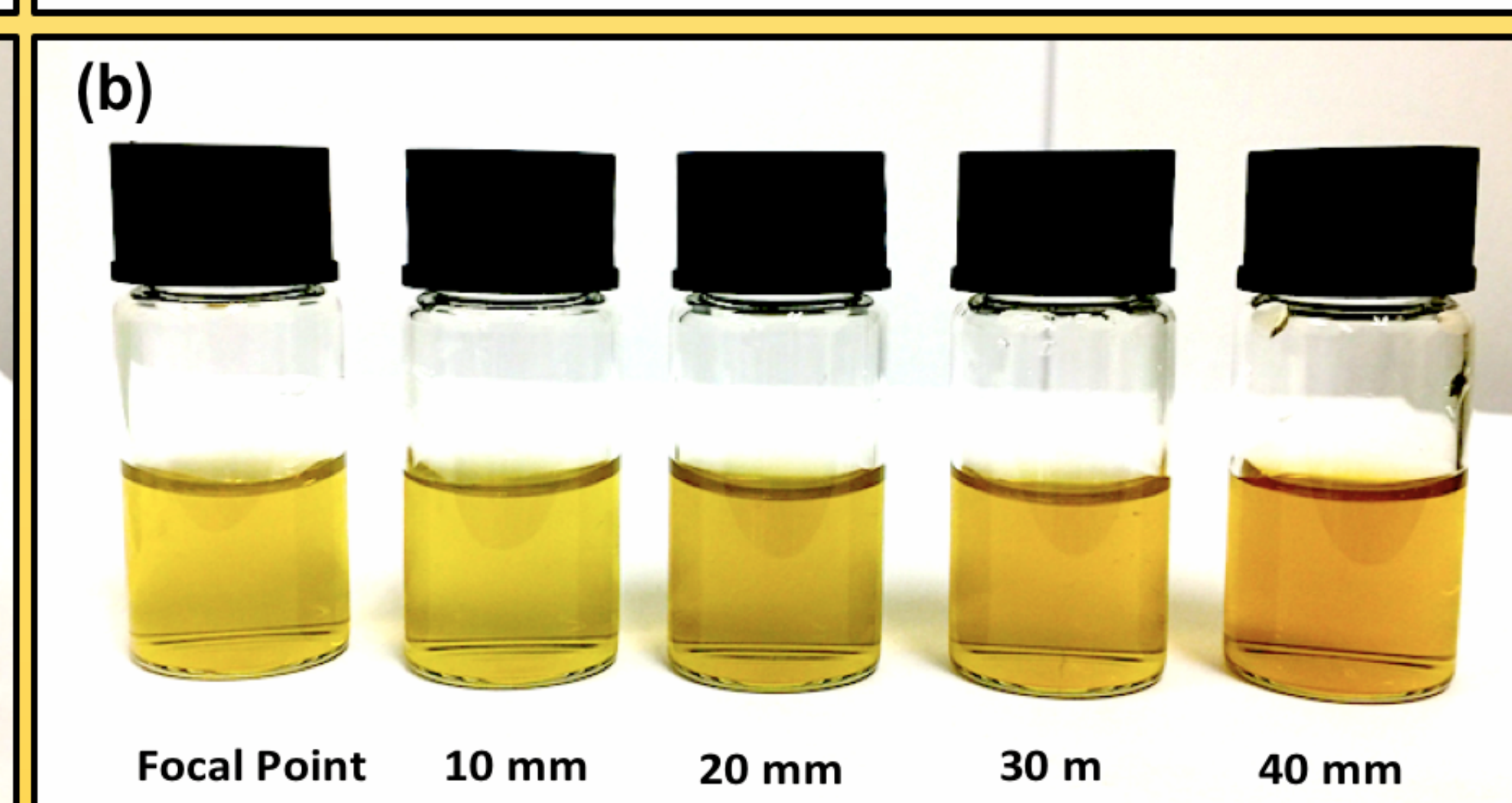
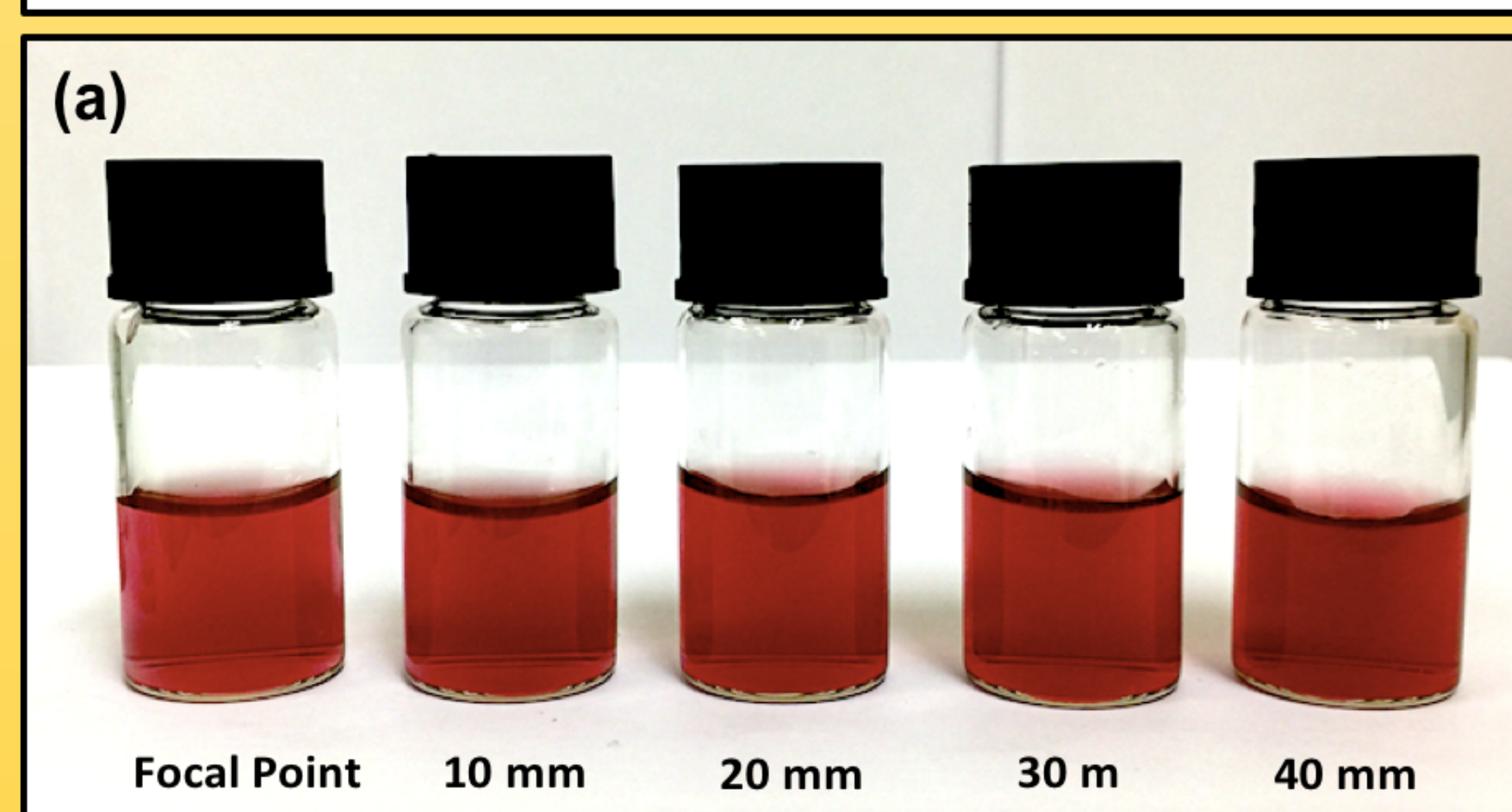
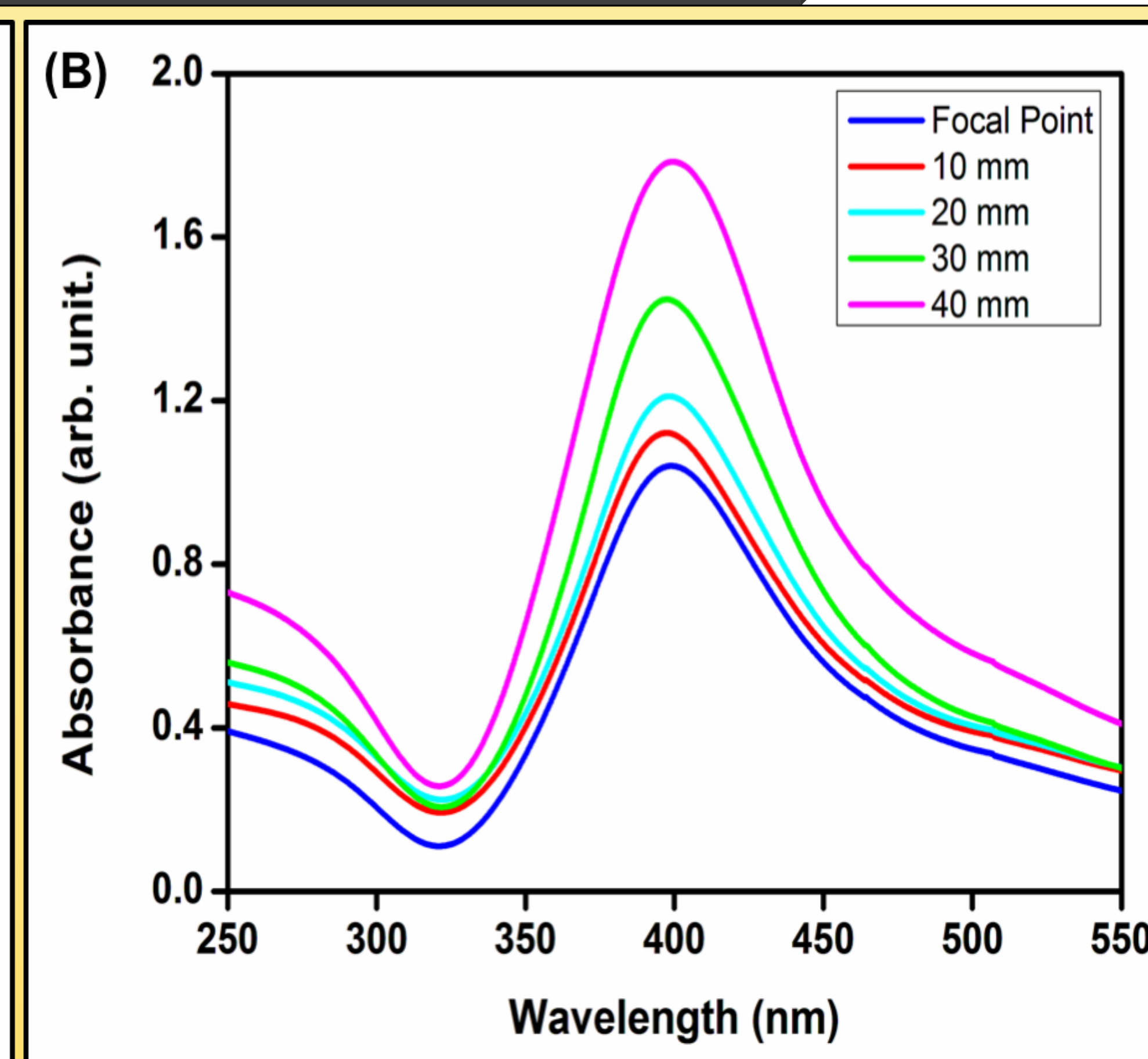
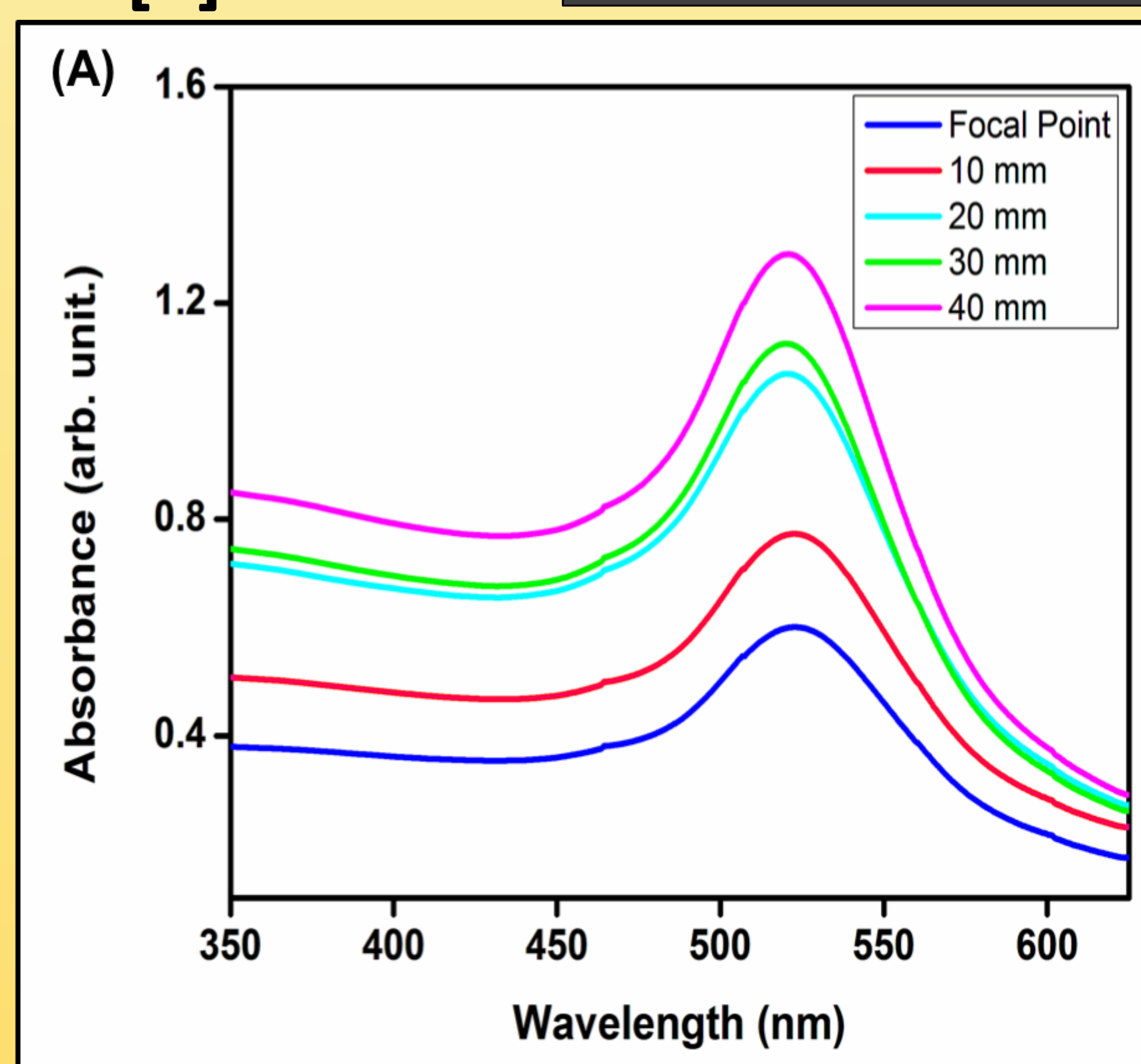
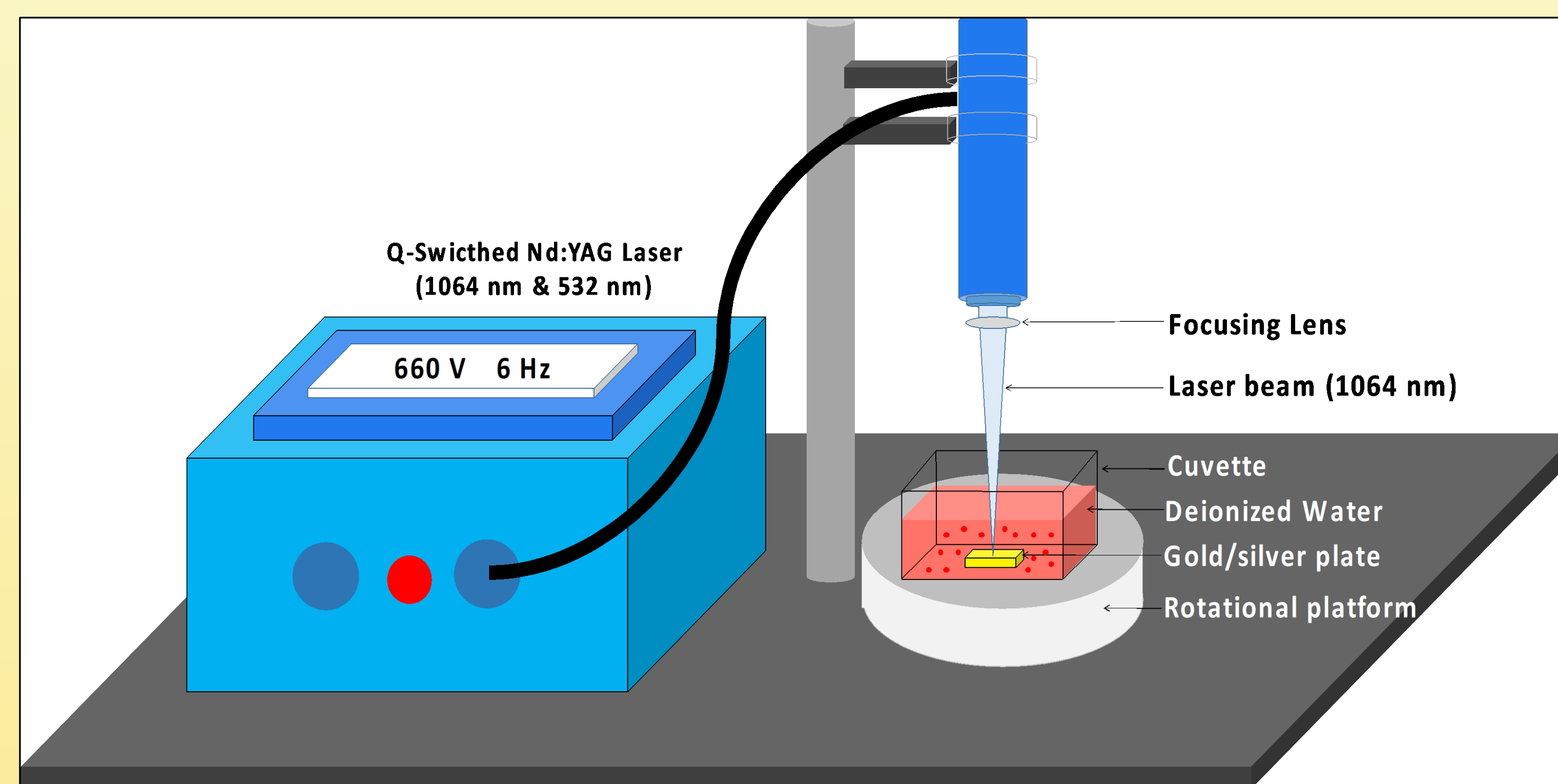
## INTRODUCTION:

Recently, noble metal nanoparticles such as gold and silver nanoparticles have attracted much attention due to exhibit unique physicochemical properties including surface plasmon resonance (SPR) [1]. Synthesize gold and silver nanoparticles by pulsed laser ablation in liquid (PLAL) technique is a simple process and without any chemical additives present which is by the direct interaction metal nanoparticles with the laser beam [2].

## RESULTS:

The strong SPR (Surface Plasmon Resonance) absorption bands of gold and silver colloidal solutions at ~ 520 nm and ~ 400 nm, respectively were observed after 5 min of ablation process, in agreement with the literature [3]. UV-VIS absorption spectra and color variations of gold and silver nanoparticles at five different target distances from focal point, 10 mm, 20 mm, 30 mm and 40 mm. When the target was moved away from focal point the intensity of gold nanoparticles (0.60 a.u. – 1.29 a.u.) and silver nanoparticles (1.04 a.u. – 1.79 a.u.) were increased due to the increase in laser beam area. Moreover, by changing the laser beam area size and position of ablated target the color variations were also observed e.g., the bright red color of gold colloidal solution (at focal point) and bright yellow color of silver colloidal solution (at focal point) was changed into dark red (40 mm) and dark yellow color (40 mm) due to the high quantity/number of nanoparticles.

## METHODOLOGY:



## CONCLUSION:

In summary, we investigated the influence of the different target distances from focal point on the absorption spectra and colors of gold and silver nanoparticles synthesized by pulsed laser ablation in deionized water.

## Reference

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- [3] F. Mafune, et al: J. Phys. Chem. B. 104 (35). 2000. 8333-8337.

## Acknowledge

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