

# STIMULATED OF GOLD NANOPARTICLES AND CYSTEAMINE-COATED GOLD NANOPARTICLES BY PULSED LASER ABLATION TECHNIQUE FOR BREAST CANCER TREATMENT

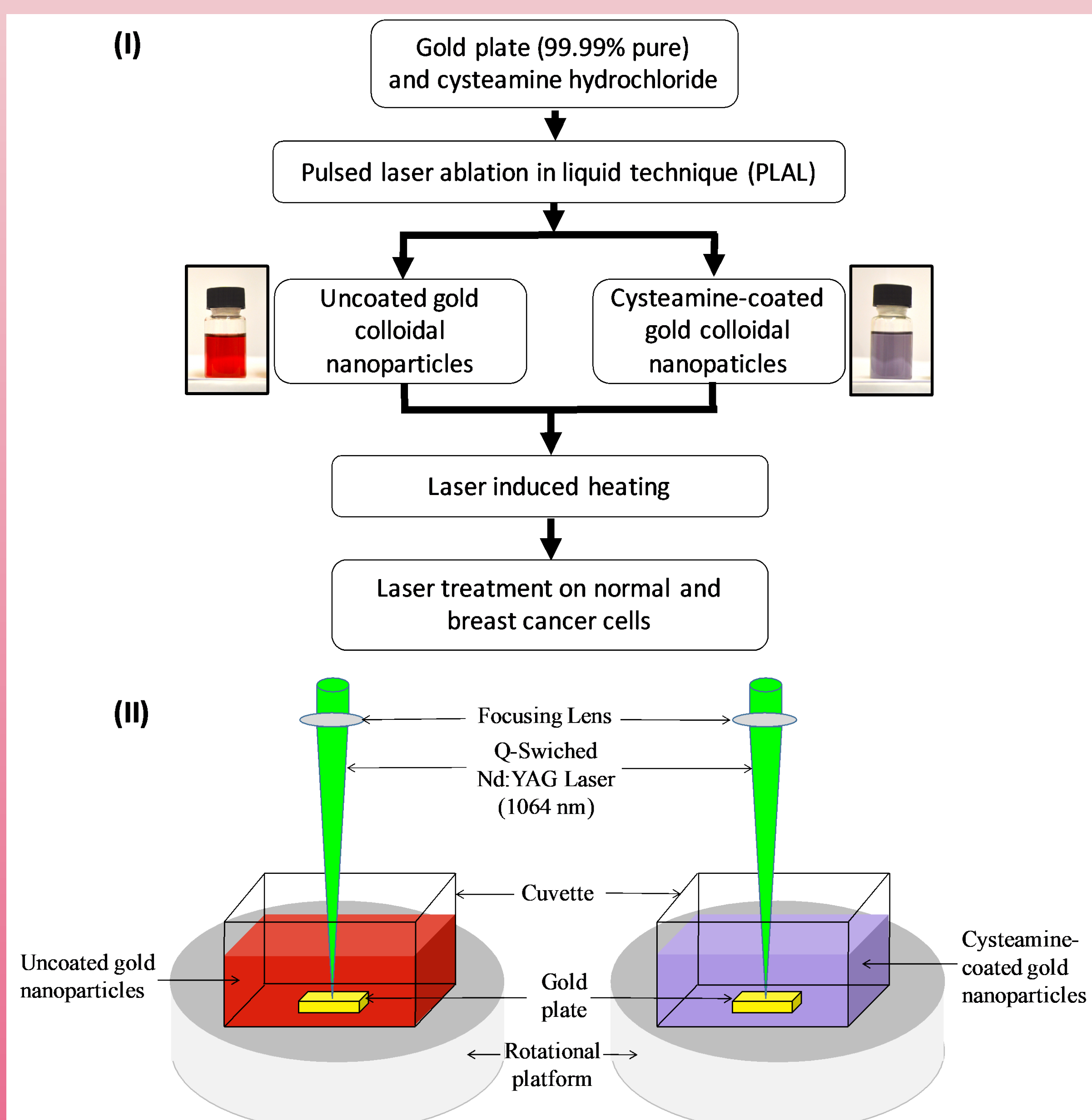
W. Norsyuhada W. Shukri<sup>1</sup>, \*Noriah Bidin<sup>1</sup> and Azli Yahya<sup>2</sup>

1. Laser Center, Institute Ibnu Sina for Scientific and Industrial Research, Universiti Teknologi Malaysia
2. School of Biomedical Engineering and Health Sciences, Faculty of Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

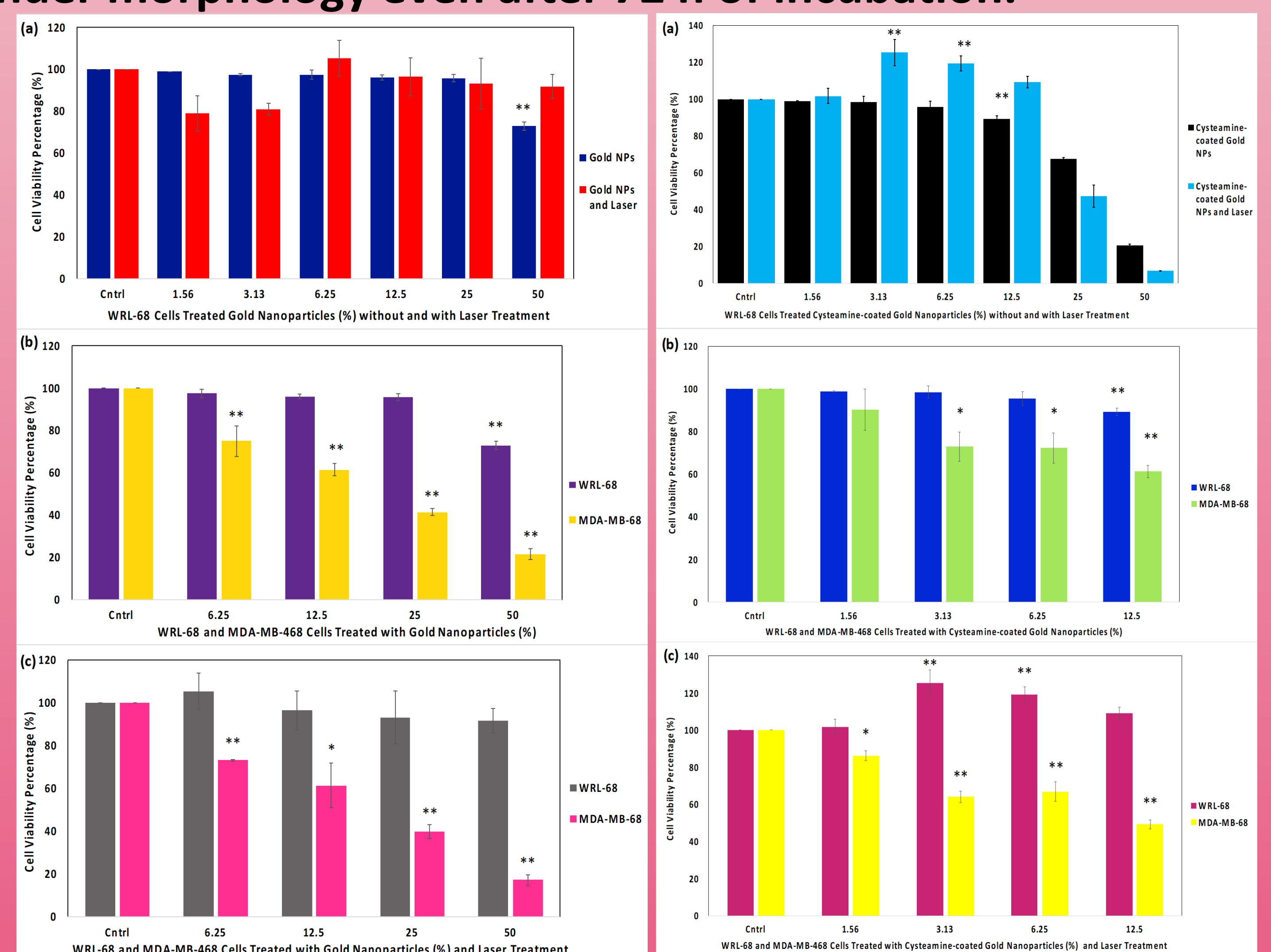
## INTRODUCTION:

Laser is one of source that rapid, efficient for synthesis and photothermal therapy as compared by other sources such as X-ray [1]. Moreover, laser is chosen to be as a weapon to kill the cancer cells which is can shoot and localize the target without destroy the surrounding area. The presence of nanoparticle can increase the killing rate of cancer cells.

## METHODOLOGY:

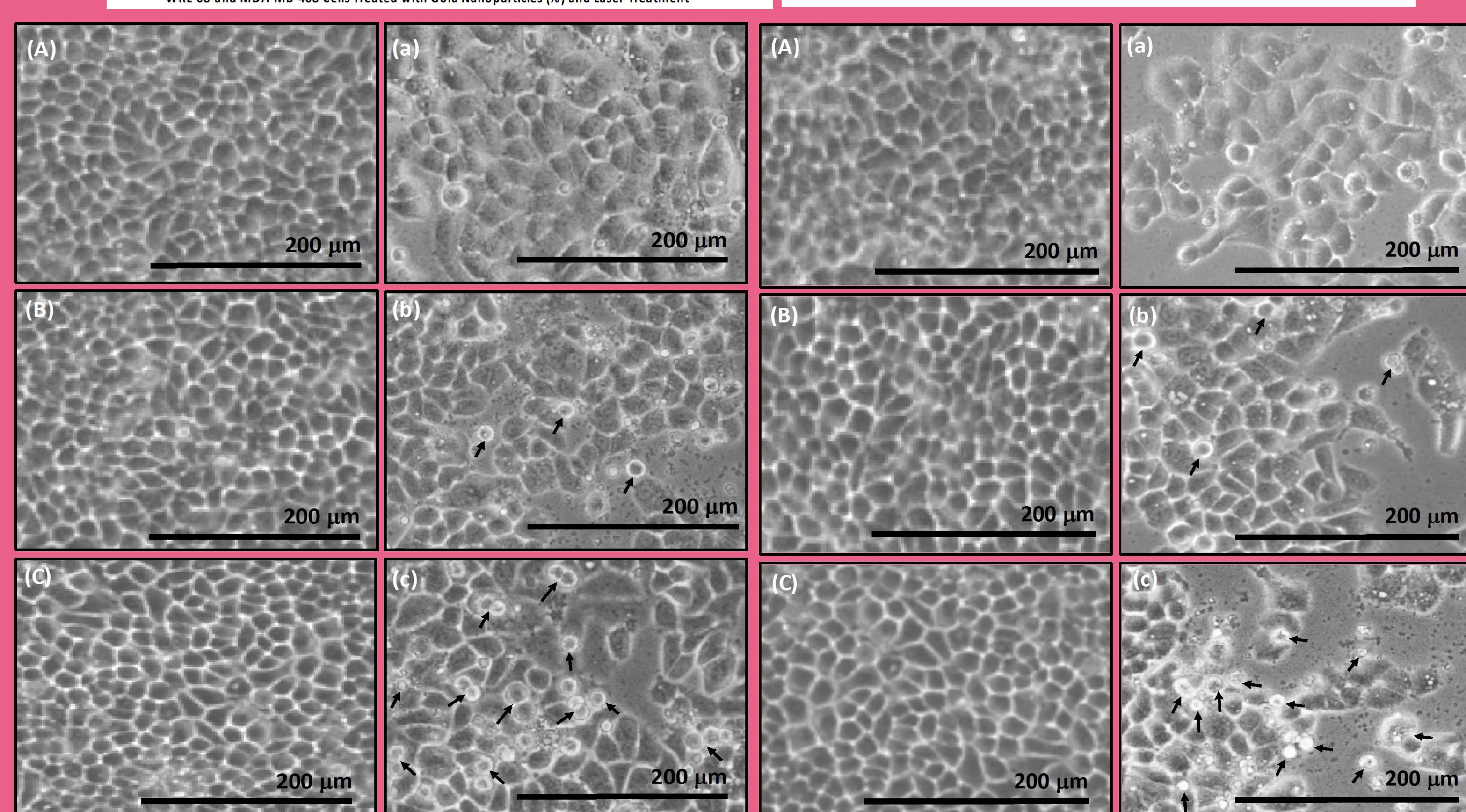
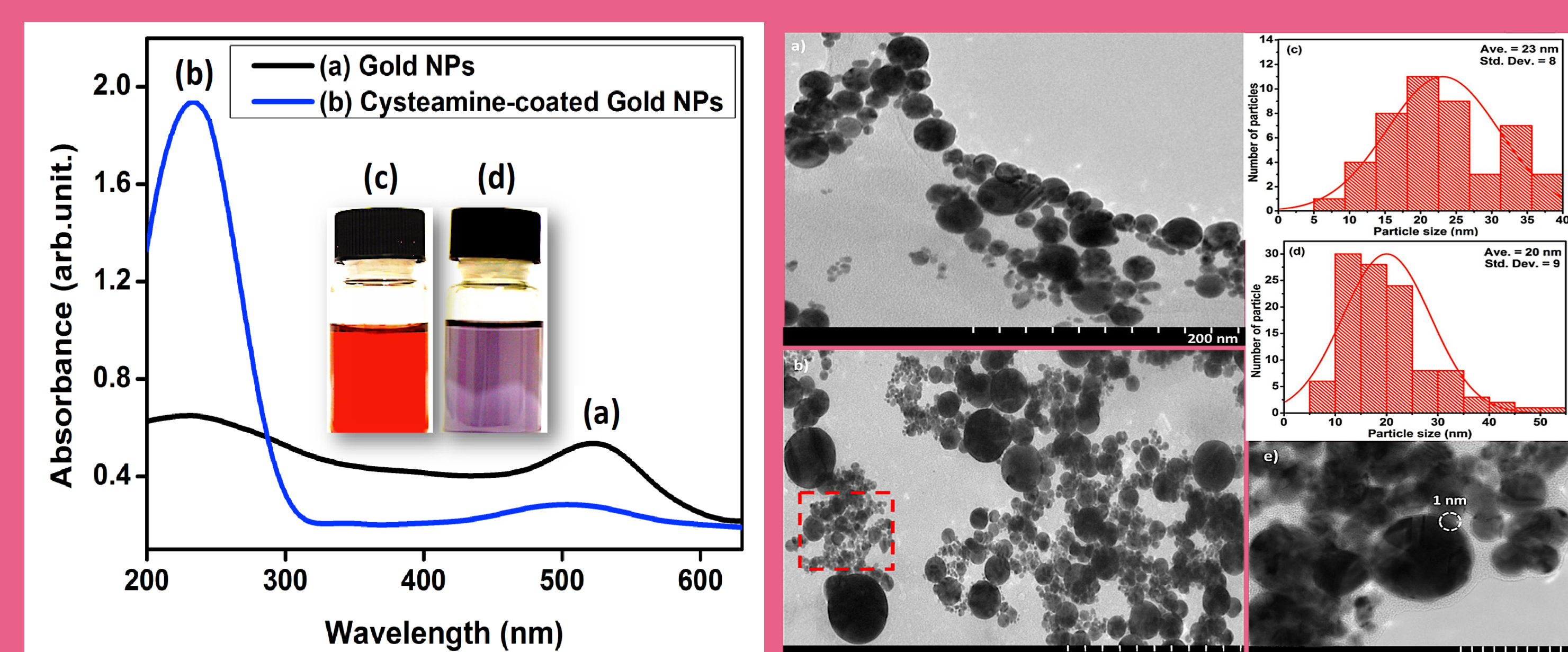


Breast cancer cells (MDA-MD-468) were treated by non-toxic dosage value of gold NPs and cysteamine-coated gold NPs. The cell viability percentage (6.25 % – 50 %) for gold NPs treated breast cancer cells (MDA-MD-468) without laser treatments is (74.87 % – 21.40 %) However, after laser stimulation, the cell viability percentage of breast cancer cells decreased to (74.87 % – 17.13 %). Whereas, the cell viability percentage (1.56 % – 12.5 %) for cysteamine-coated gold NPs treated breast cancer cells (MDA-MD-468) with laser treatments is decreased (86.23 % – 49.19 %) as compared to without laser treatment (90.20 % – 61.30 %). The gold NPs and cysteamine-coated gold NPs stimulated by laser can destruct breast cancer cells by hyperthermia effects and can not revert to their normal slender morphology even after 72 h of incubation.



## RESULTS:

UV-Vis absorption spectra of gold NPs and cysteamine-coated gold NPs were prepared by pulsed laser ablation (PLAL) in deionized water. The SPR absorption peak of gold NPs were observed at ~ 533.31 nm. Whereas, after 15 min cysteamine coating by ablation process, the absorption peak was shifted to lower wavelength at ~ 233.31 nm.



## CONCLUSION:

Thus, it can be concluded that the gold NPs and cysteamine-coated gold NPs have potential as photothermal agent to destroy breast cancer cells in photothermal therapy.

## Reference

1. T. Kong, et al: Small. 4(9). 2016. 1537-1543.

## Acknowledge

Thanks to Government of Malaysia for financial support through research Universiti Teknologi Malaysia Grant via vote 4F815.