# **Evaluation of Factors that Affect the synthesize of Au Nanorods by Camera and UV-Vis spectrophotometer and Determination of Aspect Ratio of Au Nanorods by Camera**

Maryam Abedi Ostad, Tahereh Heidari\*

Department of Chemistry, Faculty of Sciences, Ferdowsi University of Mashhad, Mashhad, Iran, Tel: 05138805540.

[Maryam.abediostad@mail.um.ac.ir](mailto:Maryam.abediostad@mail.um.ac.ir),

[Taherehheidari@um.ac.ir](mailto:%20Taherehheidari@um.ac.ir)

Gold nanorods (Au NRs) have been receiving extensive attention owing to their extremely attractive properties which make them suitable for a wide range of applications [1]. In this work, Au NRs were synthesized using seed-mediated growth method [2]. The effect of four parameters including CTAB volume, AgNO3 volume, Au seed volume and molar ratios of ascorbic acid to Au+3 in the aspect ratio and efficiency of the Au-NRs were investigated by UV-VIS spectrophotometer and camera according to univariate analysis. Furthermore, four of the most important UV-VIS spectral data such as, the longitudinal max, transverse max, absorbance longitudinal max and the absorbance transverse max were extracted by Microsoft Excel 2016 .The mathematical relationship between these quantitative characters and mean intensity of cyan obtained by camera. The results of ANOVA was shown that all these important spectral information are effective in mean intensity of cyan and also there are a linear relationship (R2=0.9334, =0.9031, =0.8710) between these important spectral information and mean intensity cyan. Also this work was shown that aspect ratio of Au-NRs is predicted by camera.



References

[1] K. Park, M.S. Hsiao, H. Koerner, A. Jawaid, J. Che, and R. A. Vaia, The Journal of Physical Chemistry C, 2017, 120 (49), 28235-28245.

[2] [B. Nikoobakht](https://www.researchgate.net/profile/Babak_Nikoobakht), [M. A El-Sayed](https://www.researchgate.net/profile/Mostafa_El-Sayed), Chemistry of Materials, 2003, 15 (10), 1957-1962.

