
Contribution ID: **235** Type: **not specified**

# Enhanced Optical Nonlinearity in Lycopene Bioconjugated Ag Nanoparticles

Abstract

It has been shown that lycopene molecules have a substantial nonlinear optical third order susceptibility, ⊠(3), because of their double bond conjugated electronic structure. It is demonstrated that natural Lycopene has a markedly higher 3rd order nonlinearity, ⊠(3), as high as 2.65 10−6 esu, the highest value of any natural phytocompound studied to date, including β-carotene [1]. This is correlated with its 1-D conjugated π-electrons linear shape. Silver nanoparticles bio-conjugated lycopene is confirmed to demonstrate an additional improvement in both linear and nonlinear optical characteristics in this contribution. This later significant additional NLO improvement appears to be opening up a possible application in photodynamic treatment in particular and biophotonics in general.

References

[1] N. Numan, S. Jeyaram, K. Kaviyarazu and M. Maaza. Scientific Reports. 12 (2022) 9078.

**Primary authors:** Ms TCHINDA NGOUNOU, Erna Leticia (University of South Africa); Prof. MAAZA, Malik (University of South Africa); Prof. HOUNKONNOU, Mahouton Norbert (University of Abomey-Calavi)

**Presenter:** Ms TCHINDA NGOUNOU, Erna Leticia (University of South Africa)

**Session Classification:** AfPS Contribution

**Track Classification:** AfPS