

Structural dependence of non-linear optical properties in ADP:PVA/PVP polymer composites

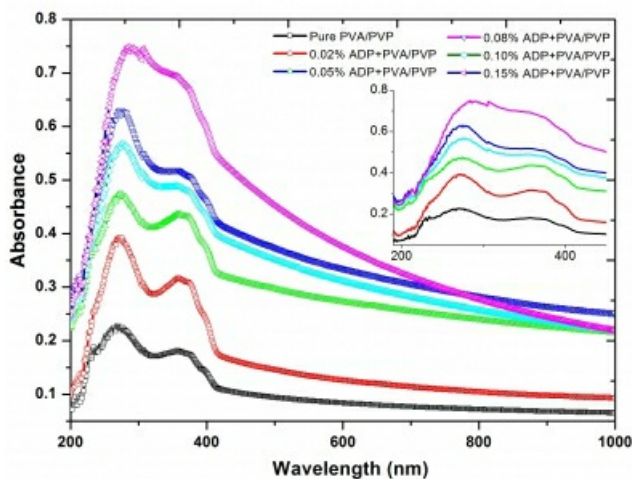
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In this paper we report the synthesis and characterisation of ADP doped PVA/PVP polymer composites by solution casting technique. It is expected that these polymer composites exhibit nonlinear optical properties, by which it can be used in several applications. The optical properties such as band gap and optical activation energy have been calculated from the results of UV-visible spectroscopy. The microstructural dependence of nonlinear optical activity possessed by these samples have been carefully examined and have made an attempt in establishing such correlations. For this we have made use of Functional Data Analysis along with the results of third harmonic generations studied using single-beam Z-scan technique. These composites are flexible, transparent, inert and durable in nature with good mechanical strength, successful implementation of these fills in the need for a biodegradable optoelectronic material.

[1] Urs, T. G. K., Bharath, K., Yallappa, S., & Rudrappa, S. (2016). Functional data analysis techniques for the study of structural parameters in polymer composites. *Journal of Applied Crystallography*, 49(2), 594-605.

[2] Janardhana, K., Ravindrachary, V., & Rajesh Kumar, P. C. (2013). Investigation of third-order nonlinear optical properties of pyrazoline-doped polyvinyl alcohol films. *Polymer Engineering & Science*, 53(9), 1958-1967.



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