

OPTICAL PROPERTIES OF POLYSTYRENE/CLAY NANOCOMPOSITES

Adnan Kurt^a, İbrahim Yılmaz^b

^aDepartment of Chemistry, Faculty of Science and Arts, Adiyaman University, Turkey,
akurt@adiyaman.edu.tr

^bDepartment of Chemistry, Faculty of Science, Karamanoğlu Mehmet Bey University, Turkey,
iyilmaz@kmu.edu.tr

ABSTRACT

Nanocomposites of polystyrene organically modified montmorillonite clay were prepared by in situ polymerization method¹ and the effect of clay on the phase separation morphology and optical properties of nanocomposites were investigated². Dispersion of clays in the matrix polymers was investigated using XRD, which showed that the clay dispersion in the polymer matrix was exfoliated. The thermal characteristics of nanocomposites were enhanced by incorporating silica into the PMMA matrix. The optical characterization of polymer/clay nanocomposite thin films prepared by spin coating technique was tested with a UV-VIS spectrophotometer. Transmittance and reflectance measured in the wavelength range 320-700 nm were used to calculate the optical constants³. The changes in dispersion and Urbach parameters⁴ were investigated as a function of OMMT nanofiller. The refractive index values at 320 nm wavelength⁵ were exchanged from 1,62 to 2,44 as the OMMT content increased from 1% to 5%.

Acknowledgement: Authors would like to thank the Scientific and Technological Research Council of Turkey (TUBITAK Grant Number 112T339) for the financial support of this research

References:

¹Fu, X.; Qutubuddin, S. *Polymer*, **2001**, *42*, 807.

²Kurt, A.; Yavuz, R.; Bozdağ, G. *Adiyaman University Scientific Journal* **2013**, *3*, 58.

³Kurt, A. *Turk. J. Chem.* **2010**, *34*, 67.

⁴Urbach, F. *Phys. Rev.* **1953**, *92*, 1324.

⁵Tawansi, A.; El-Khodary, A.; Zidan, H. M.; Badr, S. I. *Polym. Test.* **2002**, *21*, 381.