Prediction of Optical, electrical and thermal properties for a composite of bisphen_dimeth_carbonate and oxyethylene

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Abstract: A computational study has been done to predict Optical, electrical and thermal properties of a polymer composite consisting of bisphen_dimeth_carbonate and oxyethylene. Synthia module of Biovia Materials Studio software was used to predict Refractive index, Volume resistivity, Dielectric constant, Coefficient of volumetric thermal expansion and Thermal conductivity of the composite.

Objective: In this study the effect of mixing of bisphen_dimeth_carbonate and oxyethylene on the following properties have been predicted.

a. Refractive index

b. Volume resistivity

c. Dielectric constant

d. Coefficient of volumetric thermal expansion

e. Thermal conductivity

The weight fractions of the monomers were varied in the range of 0 to 1.

Software used: Synthia module of Biovia Materials Studio software (Dassault Systemes, France) was used for the study.

Results and Discussion: The effect of weight fraction of bisphen_dimeth_carbonate (Monomer 1) on the Optical, electrical and thermal properties of the composite has been presented in Table 1. The predicted properties of the composite for 0, 0.5 and 1.0 weight fractions of bisphen_dimeth_carbonate have been summarized in Table 1. The rate of change for the properties have been summarized in Table 2.

Table 1. Properties of composite of bisphen_dimeth_carbonate and oxyethylene

Property		Results for		
Name	Unit	0.0 weight fraction of bisphen_dimeth_carbonate	0.5 weight fraction of bisphen_dimeth_carbonate	1.0 weight fraction of bisphen_dimeth_carbonate
Refractive index	0	1.465	1.523	1.587
Volume resistivity	Ohm-metre	292826500000000000.000	212942100000000000.000	155017300000000000.000

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