

Área: FIS

Behavior of photochromic dyes incorporated in polymeric systems obtained by: casting and electrospinning.¹ **Julia Cericato Benek** (PG), ¹ **Reinaldo Aparecido Bariccatti** (PQ), ¹ **Douglas Cardoso Dragunski** (PQ).juliacericatobenek@gmail.com¹Centro de Engenharia e Ciências Exatas (CECE), UNIOESTE

Palavras Chave: Sensores fotocromáticos, Alaranjado de metila, Polímero filamentososo.

Highlights

This project proposes the incorporation of photochromic dyes into polymeric membranes.

The isomerization of the probe in solution and incorporated into the membrane was studied by UV/Vis spectroscopy.

Dye release into aqueous solution was evaluated for both membranes in the presence and absence of light.

Resumo/Abstract

This work studied the behavior of dyes with cis/trans isomerization incorporated into polymeric systems obtained by electrospinning (Figure 1), SEM micrograph of the electrospun polymeric sample without dye incorporation, at 5 KX magnification. The effect of electromagnetic radiation on the release of the probe (410 nm) from the polymer into the aqueous medium was observed. The isomerization of the probe in solution (Figure 2) and incorporated into the polymer was studied using UV/Vis spectroscopy, absorption spectra of methyl orange in acetonitrile (1.1×10^{-5} mol L⁻¹). Recovery after irradiation. The release of the dye in aqueous solution was evaluated for the membrane in the absence and presence of light, the latter being faster (Figure 3), Graph showing the temporal evolution of dye release in an aqueous medium with and without irradiation. A 77.9% increase in release was observed under irradiation.

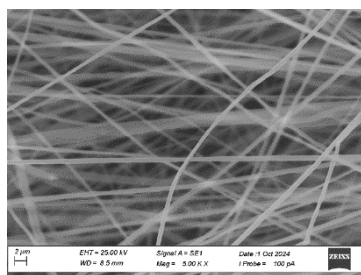


Figure 1

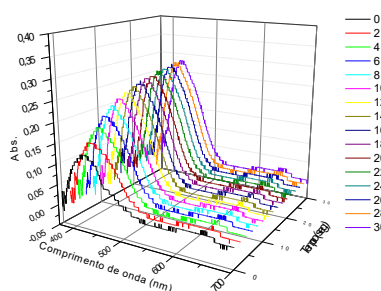


Figure 2

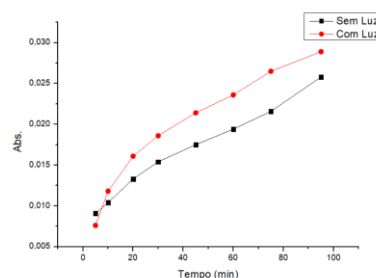


Figure 3

Figures 1 and 2 summarize the results obtained from the electrospinning of the polymer and the dye isomerization. In Figure 3, an increase in absorbance is observed between 5 and 30 minutes, with the sample exposed to light showing a faster increase. This behavior is attributed to the vibrational effect of the cis/trans isomerization, which accelerates the dye release rate.

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