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Impact of p-Terphenyl Surface Density on the Efficiency of Filters

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We studied the conversion efficiency of Vacuum Ultra Violet light of PTP films as a function of their thickness. The PTP films were coated on dichroic filters or glasses at the Leptons Laboratory, Universidade Estadual de Campinas, using the vacuum evaporation technique. The arrangement of the filters within the evaporation chamber was done to ensure different levels of pTp deposition, with those closer to the center having higher density levels. Surface density measurements were conducted by pre- and post-deposition weighing of the filters. Relative measurement of the conversion efficiency of VUV light by the PTP films were done in a vacuum monochromator with a deuterium lamp, which produces monochromatic light with wavelengths ranging from 110 nm to 400 nm. These are all relative measurement with respect to a reference sample. The goal of this set of experiments is to understand the impact of PTP thickness on filter efficiency. Furthermore, the study employs Atomic Force Microscopy (AFM), profilometry, and X-Ray diffraction tests to analyze the structural and morphological effects, which can also impact the efficiency of the film. While ongoing, preliminary findings suggest a discernible correlation between PTP surface density and the filter efficiency.

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