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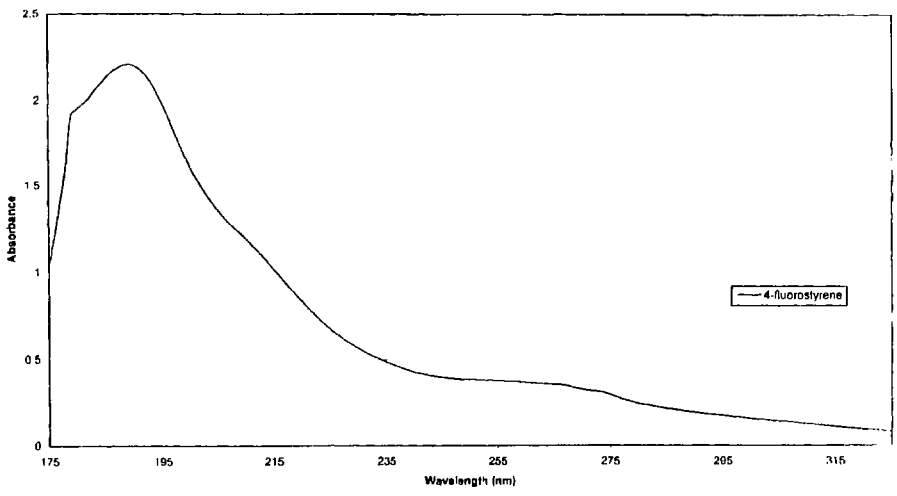
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(54) Title: POLYMERIC ANTIREFLECTIVE COATINGS DEPOSITED BY PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION

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(57) Abstract: An improved method for applying polymeric antireflective coatings to substrate surfaces and the resulting precursor structures are provided. Broadly, the methods comprise plasma enhanced chemical vapor depositing (PECVD) a polymer on the substrate surfaces. The most preferred starting monomers are 4-fluorostyrene,2,3,4,5,6-pentafluorostyrene, and allylpentafluorobenzene. The PECVD processes comprise subjecting the monomers to sufficient electric current and pressure so as to cause the monomers to sublime to form a vapor which is then changed to the plasma state by application of an electric current. The vaporized monomers are subsequently polymerized onto a substrate surface in a deposition chamber. The inventive methods are useful for providing highly conformal antireflective coatings on large surface substrates having super submicron (0.25 μm or smaller) features. The process provides a much faster deposition rate than conventional chemical vapor deposition (CVD) methods, is environmentally friendly, and is economical.

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