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Effect of Development Time on Polymer Phase Separation in a PMMA Resist

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[Scientific Journals Home  
Page](#)

**Abstract:** Developer composition type and development technique are known to influence surface and edge roughness in polymethylmethacrylate (PMMA); and it is during development, we believe, that the result is most influenced by the phase separation into polymer-rich and polymer-poor regions. This polymer phase separation is more prominent in a weaker developer and low temperature. In this paper, we investigate the effect of development time on the extent of polymer phase separation in an exposed PMMA developed in a standard developer i.e. 1:3 MIBK:IPA at 20 °C and rinsed in pure IPA for 30 sec. The polymer phase separation is found to increase with the development time.

**Key Words:** e-beam; surface roughness; PMMA; phase separation; develop time.

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