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Dependence of calixarene electron beam sensitivity and contrast on functionalization[1] GREGORY SPENCER, DANIEL RALLS, ANUP BANDYOPADHYAY, MICHAEL BLANDA, Texas State University — Calixarenes form a group of compounds that have been studied as high resolution, high contrast electron beam resists by many groups. They have been shown to be capable of high resolution. While the ultimate resolution may be limited by the size of the calix molecule ($\sim$ 1 nm), both sensitivity and contrast also contribute to their performance. In this study, a particular calixarene molecule has been tested for sensitivity and contrast with differing numbers of attached functional groups. The specific calixarene contained 6 benzene rings and was locked conformationally using bridging xylenyl groups to produce two conformations: a cone conformer and a 1-2-3-alternate conformer. To these calix[6]arenes various numbers of allyl groups were added to improve their electron beam sensitivity. The number of these added groups ranged from 0 to 8 groups. The resulting resists (1% solution with chlorobenzene) were subjected to electron beam exposure. Contrast curves for the cone and alternate conformers were measured by AFM. From this data, both sensitivity and contrast of the resists were found as a function of the number of attached groups. These results and comparison with others will be discussed.

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