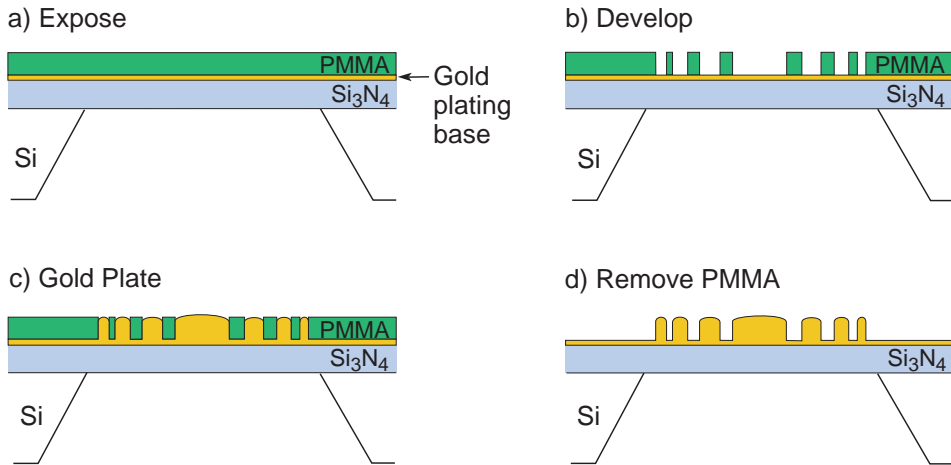


**COLORPLATE XXII.** Photoemission spectromicroscopy with multilayer coated Schwarzschild optics is illustrated in (a) and applied to a structure shown in (b). Photoelectron spectra are illustrated in (c) for two regions of an SRAM chip, one region where the silicon substrate is bare, and one region of silicon dioxide. In both cases Si 2p photoelectrons are detected during irradiation by 130 eV photons. The images in (d) and (e) are obtained at fixed electron energies corresponding to the unshifted (d) and oxide shifted (e) 2p states. The bright region (high photoelectron current) in (e) indicates an exposed region of SiO<sub>2</sub>, initially covered with titanium silicide (TiSi<sub>2</sub>). It appears that during the annealing process titanium silicide, initially covering a polysilicon pad, has agglomerated, leaving a region of SiO<sub>2</sub> exposed. (Courtesy of S. Singh and F. Cerrina, University of Wisconsin-Madison.) See text, p. 384.



**COLORPLATE XXIII.** Nanofabrication of a gold zone plate involves a multilevel structure for recording a pattern in PMMA through (a) spatially patterned electron beam exposure, (b) development into a PMMA mold, (c) gold plating into the mold, and (d) removal of the remaining PMMA to leave a gold zone plate lens on a thin silicon nitride membrane, over an etched window in the silicon wafer substrate. (Courtesy of Erik Anderson, LBNL.) See text, p. 386.