

3.155J/6.152J
Microelectronic Processing
Fall Term, 2005

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Problem Set 7

Out Nov. 14, 2005

Due Nov. 21, 2005

1. You need to fabricate a diffraction grating of SiO_2 lines on Si. The lines are to have a square cross section, $l \times l$, and a gap of l . See figure.

a) What must be the dimensions of the mask, l_m , in terms of l and its window, l_g , to achieve the desired grating. Assume the etch anisotropy is $A = 0.85$.

b) Use Fig. 10-23 in Plummer (p. 28 in "dry etch" class notes) to determine the minimum thickness of photoresist applied in terms of l , if you are going to be using an etchant of 40% H_2 in $\text{CF}_4 + \text{H}_2$.

