Wet and Dry Etching

Post-Lab Questions

1. Summarize your results using the following tables.

Wet Etching Data

	SiO_2		Si							
Etchant	BOE		KOH							
Temp (℃)	RT		RT		40±5°C		50±5°C		60±5°C	
Agitation	w/o	w	w/o	w	w/o	w	w/o	w	w/o	w
Time (s)										
Step height (nm)										
Etching rate (nm/s)										

Dry Etching Data

	SiO_2			Si		
Etchant	Ar only	SF_6 only	SF_6 and Ar	Ar only	SF_6 only	SF_6 and Ar
Time (s)						
Step height (nm)						
Etching Rate (nm/s)						

2. For wet etching of Si by KOH, plot ln(etching rate) vs. 1/T (1/K) and obtain the activation energy with and without the agitation. Determine whether the considered wet etching reactions are diffusion- or reaction-controlled. Justify your answer.
3. Sketch pattern profiles obtained by different etching methods. Are they

anisotropic or isotropic? What is the taper angle? Correlate the pattern profile with different etching conditions.

4. What should be a good mask for etching? Indicate the masks we used in the BOE, KOH and plasma etching experiments. Do you think it is a good mask or not? (Hint: consider the etching selectivity).