Kinetics and *Dynamics* of Hydrogen - Si Surface Reaction

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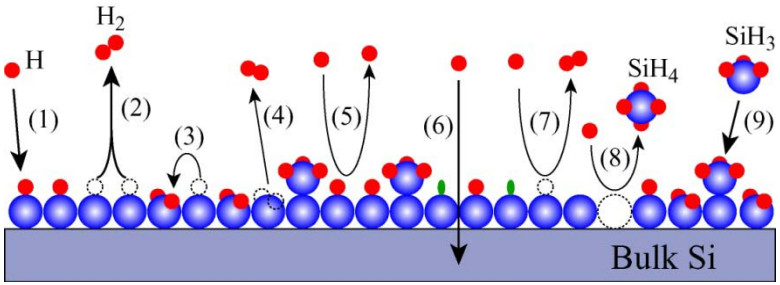
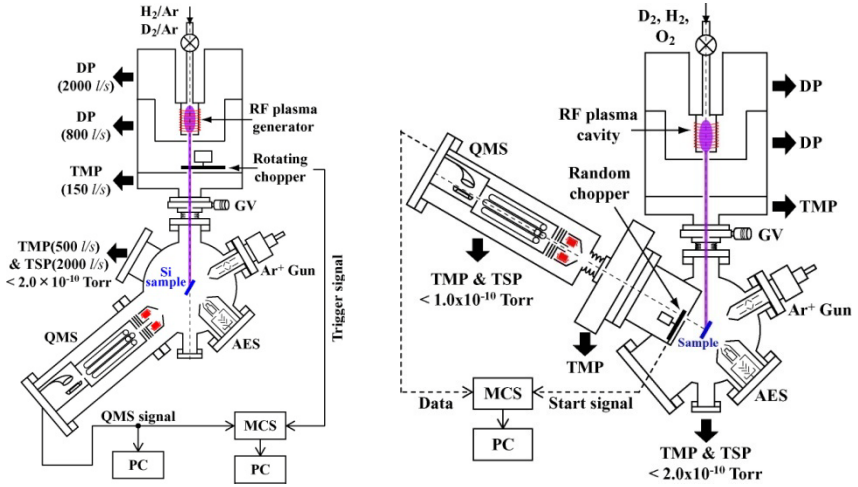


Target of our study:

(2),(4)・・・Recombinative desorption of H_2 molecules

(7)・・・H(ad) abstraction by incident H(g)

Fig.1: Growth Model of a-Si:H Film by PECVD using SiH_4/H_2



(a) ***Kinetics*** (b) ***Dinamics***

Fig.2: Experimental Apparatuses

Content:

The hydrogen reaction on Si surface has been extensively studied, both from Si device technology perspective and as a prototypical reaction of hydrogen with a covalent solid surface. Especially, we have investigated the kinetics and dynamics about the recombinative desorption of H_2 from and the abstraction reaction of H adatoms by incident-H atoms on Si surface.

Figure 1 shows the growth model of a-Si:H film by plasma-enhanced chemical vapor deposition using hydrogen and silane gases. It's common knowledge that H atoms play a significant rule in controlling the quality of grown amorphous Si films . In many reactions, the recombinative desorption ((2) and (4)) and abstraction (7) reactions are very important to create the adsorption sites of SiH_3 radicals.

Figure 2 shows the our experimental apparatuses to investigate (a) kinetics and (b) dynamics of hydrogen reaction on Si surface.

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