

Abstract Submitted
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Enhancement of hydrogen trapping by heavier ion bombardment in silicon (111) surfaces CEDRIC THOMAS, KAZUHIRO KARAHASHI, Osaka University, THIERRY ANGOT, Universite de Provence, SATOSHI HAMAGUCHI, Osaka University — Hydrogen content in a silicon substrate is an important parameter in plasma processing of silicon. With the use of ion and neutrals beams, plasma can be experimentally simulated and thus specific effects of each ionic/neutral species can be studied and compared to those in plasma experiments. In this study, with temperature programmed desorption, properties of hydrogen trapping in silicon during argon and hydrogen ion implantation have been studied. Especially focused are the effects of damages generated by heavier ion bombardment that increases hydrogen trapping in the substrate. It has been found that the amount of hydrogen trapped in silicon is much larger in the case of simultaneous injection of argon and hydrogen ions than the case of injection of hydrogen ions only. Damage induced trapping of hydrogen in silicon discussed here may have some resemblance with hydrogen trapping in amorphous carbon observed during chemical sputtering of amorphous carbon materials used for the first wall of a thermonuclear fusion reactor.

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