STIMULATION OF PLASMA-CHEMICAL ETCHING OF SILICON BY IONS WITH DIFFERENT CHARGE SIGNS

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S u m m a r y

The relative influence of ions with different signs on the ion-assisted etching of silicon is under investigation. Fluorine radicals are produced by the direct current glow discharge with pressure gradient. The beam of positive or negative ions is produced by a PIG source. The flows of radicals and the ion beam meet on the surface of silicon placed in high vacuum. Positive ions can be converted into fast neutral atoms by the method of resonance exchanging in an own gas. It is shown that fast atoms have the highest stimulating ability. The catalytic influence of positive ions is twice less. Negative ions have the intermediate parameters. It is found that some kinds of ions (for example, molecular oxygen) decelerate the etching, i.e., they behave themselves like an inhibitor.