

High Density Plasma Etching of IrMn Thin Films in a HBr/Ar Plasma

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High density plasma etching of IrMn thin films masked with Ti films was explored using an inductively coupled plasma reactive ion etching in a HBr/Ar plasma. As the HBr gas added to Ar, the etch rate of IrMn thin films gradually decreased, but the etch rate of Ti hard mask showed initial decrease and then increased with increasing HBr concentration. The redeposition on the pattern sidewall completely disappeared and the sidewall slope of the etched patterns became slanted with increasing HBr concentration. Based on the etch characteristics of IrMn films, it can be concluded that the high density plasma etching of IrMn films using a HBr/Ar gas follows a sputtering etching mechanism with the assistance of chemical reaction on the films on the film surfaces.