

Design and Analysis of Permanent Magnet Array for Development of Large Area Magnetron Sputtering Sources

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Recently, large area magnetron sputtering sources have become one of the most important methods in thin film fabrication area. Therefore, development of novel sputtering source available for large area process with high sputtering efficiency is highly demanded. In general, the permanent magnets utilized in the sputtering source affect plasma density, plasma uniformity, target voltage, and directionality of the ions and electrons and eventually affect to the sputtering performance such as deposition uniformity, sputtering yield, target efficiency etc. In this study, we have investigated the analysis method for designing the high-efficiency large area sputtering source. Especially, various kinds of sputtering parameters including plasma uniformity and sputtering yield were systematically studied by varying the permanent magnet configuration and source design.