

CHARACTERIZATION OF TEOS THIN FILM DEPOSITIONS ON PECVD REACTORS

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Abstract. *Abstract. The deposition of silicon dioxide layers on Silicon substrate using tetraethyl-orthosilicate (TEOS) by Plasma Enhanced Chemical Vapor Deposition (PECVD) method was characterized in this work. Deposition rate, film thickness uniformity, refractive index uniformity and film stress were analyzed in relation to variation of process parameters such as: chamber pressure, substrate temperature, RF Power and mass flow rate (of oxygen and TEOS) had been investigated. The challenge is to optimize the film deposition for (a) a high deposition rate with low film stress which is significant for Microelectromechanical Systems (MEMS) and (b) a high deposition rate at a low temperature (200°C) which is relevant aspect for microelectronics packaging applications.*

Keywords: Keywords: PECVD, TEOS, silicon oxide, residual stress, thin film deposition

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