Abstract

We report on the development of a fully operational atomic layer deposition (ALD) system. This system is computer controlled and can deposit multilayered systems without user intervention. We describe the design of manifold, reaction chamber and exhaust. Additionally we give some features of the automatization software and electronics. To evaluate the ALD performance we used as precursor trimethyl aluminum (TMA) and tetrakis (dimethylamino) titanium (TDMAT) to deposit Al2O3 and TiO2, respectively, in nanolaminated film structures. The thicknesses and composition of the films are precisely controlled, as determined by spectroscopic ellipsometry, and the nanolaminates have a sharp interface as indicated by Auger depth profile.

Keywords

Atomic layer deposition, nanolaminates, instrumentation, automation, ellipsometry.

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