

Tuesday Evening, May 23, 2023

Special Interest Talks

Room Town & Country A - Session SIT2-TuSIT

Special Interest Session II

Moderator: Jyh-Wei Lee, Ming Chi University of Technology, Taiwan

7:00pm SIT2-TuSIT-1 **Functional Nitride and Oxide Thin Films – the Key to Our Digital World**, *Joerg Patscheider*, Evatec AG, Switzerland **INVITED**

Modern telecommunication depends heavily on assemblies of integrated devices that are composed of most intricate combinations of functional thin films. Nitrides and oxides present an important category among these functional thin films, as their electrical properties allow for tailoring electric currents to build logical elements such as transistors, RF filter devices and memory architectures, to name just a few applications. Moreover, the bandgap of many of these materials may be tuned by alloying with additional elements to tune their electrical and optical properties.

This contribution will present examples from different fields of importance for applications that are driven by the ever-increasing market for handheld devices such as smartphones and smartwatches. We will look at piezoelectric films of AlN and AlScN for frequency filters, shed light on integrated transformers consisting of multilayered ferromagnetic films with intercalated insulators and dive into the world of multilayered oxide coatings for various optical filter applications.

These examples with their respective technological challenges necessitate corresponding equipment concepts for volume manufacturing. Advanced control of thickness and residual stress uniformity, prevention of cross-contamination and parallel processing solutions will be explained. Manufacturing techniques to produce thin films on 8" and 12" wafer level meeting the stringent requirements of today's semiconductor and optical industry will be presented.

Author Index

Bold page numbers indicate presenter

— P —

Patscheider, J.: SIT2-TuSIT-1, **1**