Tuesday, May 12

12:10 p.m. LP-1 A Demonstration of Theory and Methods for Cost-Effective Nanoindentation

N. Randall and E. Skopinksi, CSM Instruments, Needham, MA

Instrumented nanoindentation is a widely used method for the analysis of thin films and coating systems. In this live demonstration, an examplary nanoindentation study will be performed. Focus will be given to the relation of results to basic theory, to provide understanding on the theoretical source and meaning of instrumented indentation results. The CSM Table Top Instrument combines all the advantages of the Standard Nanoindentation Tester into a small and simple-to-use instrument which is ideally suited to routine nanoindentation testing where a Full Platform System may not be appropriate. The nanoindentation head offers the same high performance as the standard Nanoindentation Tester (NHT) head. It is also upgradeable with optional technical features like the Sinus mode (Dynamic Mechanical Analysis: storage and loss moduli) and can be configured with a range of displacement stage options and integrated video microscope. The Load Range is 0.1 to 500 mN, the Load Resolution is 0.04 μN, the Max Depth is 200 μm and the Depth Resolution is 0.04 nm. CSM Table Top Nano Indentation Tester is a cost-effective solution which meets the ISO 14577 & ASTM E2546 standards.

- Easy to use
- Full NanoIndentation Functionality
- Robust Head
- Compact Frame
- Manual or Motorized Table

Tuesday, May 12

12:45 p.m. LP-2 Demonstration of Sputter Target Bonding at Room Temperature Using NanoFoil®

M. O'Neill and A. Duckham, Reactive NanoTechnologies, Inc., Hunt Valley, MD

NanoBond® is a process that enables solder bonding of materials in nanoseconds. This is accomplished by inserting a sheet of NanoFoil® in between two surfaces prepared with prewet solder. Under pressure, the NanoFoil® is ignited and serves as an embedded, sacrificial heat source. The soldered assembly is bonded with little evidence of deflection or stress created by the bonding process. The NanoBond® process has been adopted by several companies who bond sputter targets to a backing plate. NanoBond® is used to bond metal and ceramic oxide targets to a range of backing plate materials. In many cases this combination possess a temperature coefficient of expansion mismatch (TCE). The NanoBond® process only heats the interface being bonded, avoiding any stress or deflection due to the mismatch, creating a strong and reliable bond. Due to the flexibility in using any solder, the NanoBond® process enables higher power sputtering, reduction or elimination of arcing, use of lighter and less expensive backing plates, and an overall increase in sputter tool uptime. The NanoBond® process can be conducted in stages, allowing for improved manufacturing flow and enabling the ability to bond sputter targets live for the participants of SVC 2009.

Tuesday, May 12

1:20 p.m. LP-3 Better Utilization with Cylindrical Magnetron

R. Newcomb and J. Hrebik, Angstrom Sciences Inc., Duquesne, PA

Angstrom Sciences has created a compact, lightweight, and economical cylindrical magnetron specifically designed to offer uniform thin films while maximizing target utilization . Cylindrical Magnetrons can hold up to 3 times the amount of target material as a planar magnetron with the same spatial area. The ONYX-Revolution further optimizes material investment with greater than 85% target utilization and with a universal and cost-effective magnet design, is able to fit any target type.