SCCAVS 2015 Vacuum Equipment Exhibition Announced

Corinne D’Ambrosio

On October 1st, 2014, the SCCAVS held an annual equipment exhibition at UCLA with 35 vendors, short course program, and student poster symposium. It was sponsored by Agilent Technologies, Evans Analytical Group, IONTOF, R.D. Mathis, and UC Components.

Based on feedback received at this year’s show, the 2015 program will be held in Orange County, at the Holiday Inn Hotel & Conference Center, Buena Park. Conveniently located just off the 5 and 91 freeways near Anaheim Convention Center, Disneyland Park, Knott’s Berry Farm, and the Angel Stadium of Anaheim, the conference center offers easy access from both Los Angeles & Orange County.

The annual vacuum equipment exhibition will be held on Tuesday, September 29, 2015.

A three-day short course program will be held in conjunction with the equipment exhibition from Monday, September 28th through Wednesday, September 30th. Please send your suggestions for course topics to corinne@sccavs.org or RSVP to attend our next committee meeting at 6:00pm on January 13, 2015 at Renato’s Italian Restaurant at 15383 Brookhurst St. in Westminster.

Online Registration COMING SOON!

Interested exhibitors may contact us at the email below to be placed on early interest list and receive announcements regarding registration, pricing, sponsorship, and booth selection:

corinne@sccavs.org
Thank you to our sponsors:

Index Dispersion Enhanced Monitoring by Wayne Rodgers

The SCCAVS held two free Technical Talks at the annual Equipment exhibition & Short Course Program, which was held in October 2014 at UCLA’s Covel Commons. Wayne Rodgers (President, Eddy Company, Apple Valley, CA) presented a talk on Index Dispersion Enhanced Monitoring (IDEM), a simple method for measuring the system specific Index Dispersion of vacuum deposited optical coatings. Incorporating these Index Dispersions into available Thin Film Design programs enables repeatable and accurate prediction of coating outcomes. Over the last 5 years, the use of real time IDEM for deposition control has demonstrated that exceptional coating accuracy can be obtained from the very first run of a new coating design. (cont’d page 4)
Super-Cooled Argon Clusters—A Universal Sputtering System?
By Dr. David Surman

Massive Argon clusters formed by the adiabatic expansion of Ar gas are evolving as a sputtering source for a wide range of materials, and in particular organic materials where both sputtering and the retention of chemical information can be achieved simultaneously. These sources offer considerable benefits due to the high sputter yields that can be achieved, and therefore significant sputter depths can be obtained. This high sputter yield along with a significant reduction in the induced chemical damage (when compared to traditional Ar-ion sputtering) is achieved through the individual atoms within the Ar cluster having a low partition energy so not only do they not penetrate the material they are being used upon, but they can remove large amounts of material due to the lateral energy dispersion from the cluster ion when it breaks up on contact with the surface of the material.

(Cont’d on page 5)
It has historically been difficult to measure the refractive Index Dispersion of thin film coatings, much less do so in real time during the coating process. As a result, generic standardized index dispersion curves for each material are used for thin film designs and for coating layer cut off control. The errors that result from using standardized instead of system specific curves compound with each additional layer deposited. IDEM provides a solution to this underlying source of Thin Film coating inconsistencies.

For more information contact:
Wayne Rodgers
Eddy Company
(760) 961-8457
wayner@eddyco.com

These results obtained without process iteration illustrate the capabilities of the IDEM system. The 6 curves shown here were generated for identical 5 layer coatings applied to 6 different substrates and include 2 interrupted runs. Repeatability across the 6 runs was 0.2%.
Super-Cooled Argon Clusters-A Universal Sputtering System? (Cont’d)

The talk focused on the development and implementation of these clusters for the sputtering of organic and more recently in the sputtering of inorganic materials where they are being shown to also induce less chemical reduction normally associated with conventional Ar-ion sputtering. A series of examples of both multi-layer organic materials and inorganic materials were used as examples of both the sputter depths that can be achieved and the retention of chemical structure – as determined by XPS measurements. The conclusion is that it’s not possible to say definitively that these sources will become a universal sputtering source but they are developing into a powerful tool for the analyst when sputter profiling and chemical information retention are critical.

For more information contact:

Dr. David Surman
Kratos Analytical
Chestnut Ridge, NY 10977
dsurman@kratos.com

Massive Ar cluster ions:

- Individual ‘atoms’ in the cluster have low energy (e.g. Ar$_{2000}^+$, 2000 atoms at 20 keV – 10 eV partition energy) they do not penetrate deeply into the sample.
- High energy deposited into a small volume – non-linear effects enhance the sputter yield without damaging the subsurface.


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**December 2014/January 2015**

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