



## Ebatco Nano

A Monthly Newsletter

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### **Nano Brief**

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Included in this month's issue are:

- Upcoming events and tradeshow for Ebatco.
- Another member of the Nano Analytical Testing (NAT) Lab.
- A Case Study analyzing the interfacial adhesion of the coating on a soft drink can.

### **Ebatco**

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We would like to thank everyone who stopped by and visited us at the past exhibitions. Our last scheduled exhibition for this year will be at the International Symposium for Testing and Failure Analysis (ISTFA). The exhibition will run from November 15<sup>th</sup> through the 16<sup>th</sup> in the McEnery Convention Center, San Jose, California. Please visit us at **Booth #225** and chat about the wonderful nanoworld, nanomaterials, and nano/micro scale characterization of materials and devices. As always, our staff scientists will be happy to meet you in person.

### **NAT Lab**

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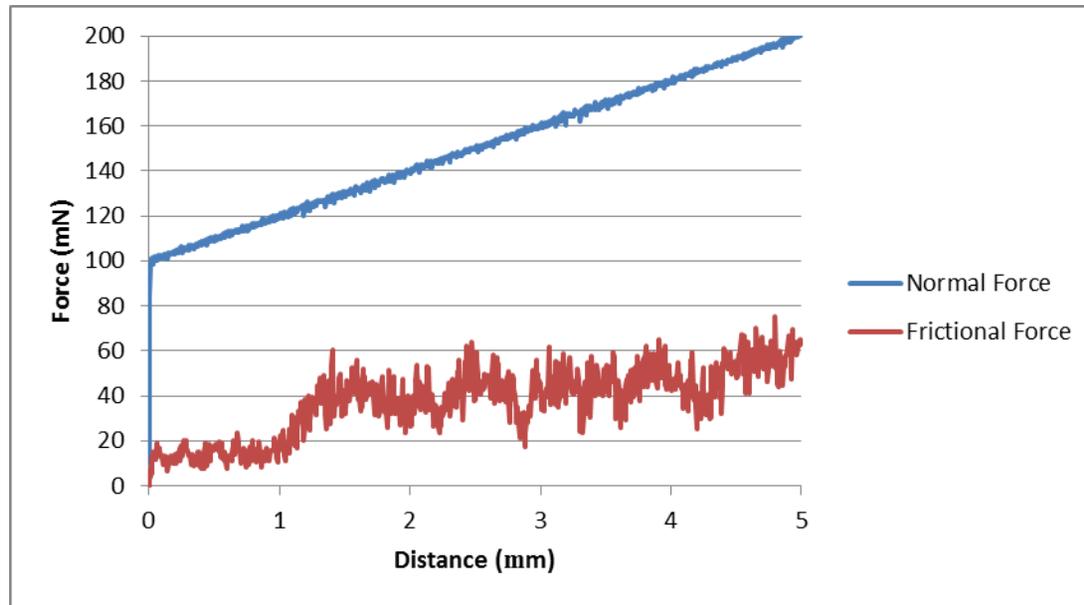
In our first issue, we introduced the people responsible for our NAT Lab. However, we omitted an important member; someone who spends countless hours in the lab. That member is our peace lily. While a plant is not capable of performing nano indentation, Zeta potential, micro contact angle, and other tests, it still fills an important role in day-to-day lab work. Like other plants, the peace lily helps to oxygenate a room. More importantly, the peace lily excels at air filtration. A peace lily can filter chemicals such as benzene, formaldehyde and other unwanted chemicals from the surrounding air. Because of this, the peace lily is rated as one of the top houseplants for air filtration by NASA.



### **Case Study**

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Surface coatings are of great benefit to a product. One of the most common types of coatings, paint, can increase resistance to surface degradation while maintaining or enhancing an aesthetic appeal. To be effective, the paint must be able to adhere to the product's surface. Paint that is too easily chipped or scraped away can damage the perceived quality of the product. Scratch testing can be used to characterize the mar and scratch resistance, interfacial adhesion strength and coefficient of friction of paints and other surface coatings. Presented here is the micro-scratch data using a CSM Micro Indentation and Scratch Combi Tester instrument on the paint coating of a Pepsi can. At a scratch distance of approximately 1 mm, a large increase in the measured frictional force was detected. This increase corresponded to a failure event at interface of the paint coating and its substrate. The normal force at the location of the failure corresponds to the critical load of coating interfacial adhesion failure of the Pepsi can paint coating. The critical load is directly proportional to the interfacial adhesion strength of the paint coating to the substrate. By knowing the critical load one can develop the desired interfacial adhesion of the paint coating through process fine tuning or monitor the quality of the paint coatings in the lot to lot production.



Scratch test data for the paint coating on a Pepsi can.



Magnified view of critical failure location of the paint coating on a Pepsi can.

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