Nano Brief

Greetings and welcome back! Thank you very much for your time spent reading our first newsletter sent to you last month. Your feedback was very encouraging. We hope that you will enjoy this issue as well. Included in this issue are:

- Exciting upcoming events and tradeshows for Ebatco. At these events, our staff scientists will be very happy to meet you in person and answer any questions you may have on nano.
- The Nano Analytical Testing (NAT) Lab is offering a special discount for September to appreciate returning customers and welcome new ones.
- In this month's Case Study, we will show you how to convert nanohardness into conventional Vickers hardness.

Ebatco

If you are planning on attending the following conferences and tradeshows, our staff scientists are standing by to welcome you and meet you in person. Please visit us and chat about the wonderful nanoworld, nanomaterials, nano/micro scale characterization of materials and devices.

- August 29th -31st, **Booth # 1831**, ACS Fall 2011 National Meeting & Exposition, Denver, CO
- October 18th-19th, **Booth # 629**, MS&T'11, Materials Science & Technology 2011 Conference & Exhibition, Columbus, OH
- October 24th-26th, BioInterface 2011, Bloomington, MN
- November 15th-16th, **Booth # 225**, International Symposium for Testing and Failure Analysis (ISTFA), San Jose, CA

Hope to see you soon!

NAT Lab

The NAT Lab is proud to announce we have added new instruments to our growing laboratory.

Case Study ——————————

Nanohardness is determined through nanoindentation using the widely accepted Oliver and Pharr method. The nanohardness values are determined through a ratio of indentation load to projected contact area with well characterized indenter tip geometry. The indenter tip typically used in nanoindentation is a Berkovich tip, but other tip shapes can be used as well. Nanohardness values are usually reported in SI units, which can cause confusion for those in the industry more familiar with Rockwell and Vickers hardness scales. Thankfully, it is possible to easily convert nanohardness values to Vickers hardness for better clarification of a material's properties.]For an ideal Berkovich tip, the projected to face contact area ratio is 0.927. As always, the units must be considered when converting values.

$$H(in\ GPa) = \frac{HV(in\ \frac{kgf}{mm^2}) * 0.009807(\frac{N}{m^2})}{0.927} = 0.01058 * HV(in\ \frac{kgf}{mm^2})$$

Where H is the nanohardness value and HV is the Vickers hardness value.
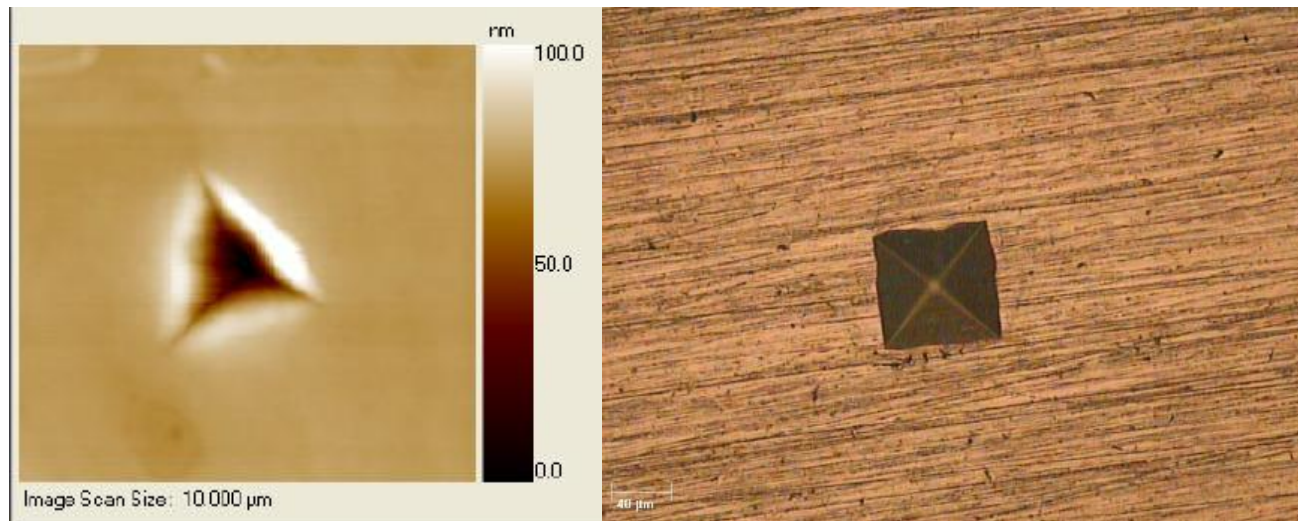
Typical indents made with a Berkovich indenter tip (left) and Vickers indenter tip (right).

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