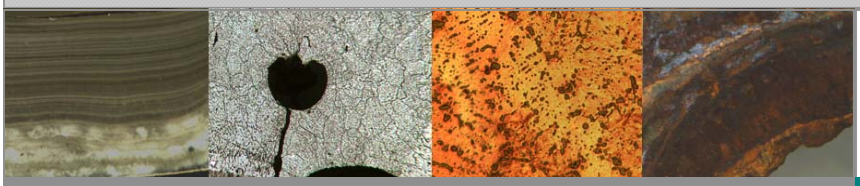
NUTS & BOLTS



New Hampshire MATERIALS LABORATORY, INC.
Your Problem Solving Partner

What Is A Glow Discharge Spectrometer

MAY 2010 / ISSUE 4

Welcome to New Hampshire Materials Laboratory

NHML is always trying to find ways to enhance our services and customer relations.

That was our hope when the lab acquired our new GDS (Glow Discharge Spectrometer). The next step is to convey the how important paperwork is for your testing. Many times a sample will sit idol because no paperwork was included. As an added convenience for our customers, a link to our "Sample Request Form" has been included in this issue of the Nuts & Bolts.

A link to a brief survey has been included in this issue. This survey is designed to help us write more informative articles on the "hot topics of the day" and topics of interest.

Tim Kenney
Laboratory Director

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Be sure to review our **industry definitions** if you need assistance with terminology

Join Our Mailing List

What Is A Glow Discharge Spectrometer?

Glow Discharge Machine

Glow Discharge Spectrometer (GDS) is state of the art technology used to measure elemental variations and depth profiling of ferrous and nonferrous materials such as Stainless Steel, Aluminum, Brass, Unalloyed Copper to name a few.

How is this done? The spectrometer in the GDS uniformly sputters a small amount of metal from the sample surface (typically 100-200 micrometers) and draws this material into an anode. Where a powerful electric field excites the atoms and they emit light at characteristic wavelengths. The emitted light passes through grating. The light is than dispersed and directed to a bank of photomultiplier tubes in the back of the instrument where the light is quantified.

NHML Staff Bio

Tim Kenney
President/Owner

NHML and Tim go way back to his college days at UNH. →

The advantages of the GDS verses other types of analyses are minimal sample preparation, separation of sampling sputtering from excitation resulting in freedom from metallurgical history, quick matrix changes, overall improved precision.

For a sample to be analyzed in this instrument, it must have a SMOOTH, FLAT surface at least one-half inch across. The GDS can be appropriate for essentially non-destructive testing of fabricated parts.

NHML currently has the following methods and standards available for the GDS:

- Carbon & *Alloy Steels
- Cast Iron
- Tool Steel
- Stainless Steel
- Cast Aluminum
- Unalloyed Copper
- *Titanium Alloys
- Aluminum
- *Nickel Alloys
- Brass
- Telurium/Berrylium Copper

*National Institute of Standards and Technology traceable check standards, or secondary where NIST standards are not available, are used for calibration and drift correction for each alloy method.

What Is A Lũder Band?

According to Wikipedia, a Lũder Band is a localized band of plastic deformation that can occur on some materials before fracture. These bands can arise from residual stresses due to welding. Lũder Bands often are a result of strain aging by discontinuous yielding and can be commercially important for producing wrinkled lined finishes. It happens on low carbon steels and some Al-Mg Alloys.

Click here..**http://en.wikipedia.org/wiki/L%C3%BCder_band** to read more about Lũder Band.

The original founder and owner of NHML, Fred Hochgraf was Tim's professor. Tim has been a fixture here at the lab from almost day one. When Fred decided he no longer wanted to be involved in the day to day grind, who else was better fit to take over the reins of NHML but Tim. In 2008, Tim took over full ownership. It is Tim's mission for NHML to continue as "Your Problem Solving Partner."

To find out more about Tim visit his profile on LinkedIn

View my profile on LinkedIn

What's Happening At NHML

What do pellets made of Polyamide (a type of polymer commonly used in textiles, automotives, carpet, and sportswear due to their extremely high durability) and UV stabilizer have in common with a polymer used to manufacture a vacuum molded case and cover and the UV resistance of this polymer? Nothing other than NHML helped both clients find the answer to their questions. Intrigued to find out more? Click on the link to read case histories…

FTIR of Polyamide Pellets

Polymer Under UV

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