Materials Analysis

At GTP our onsite analysis group supports R&D and manufacturing with complete materials characterization using a wide range of instrumentation. Our analysis lab is capable of detailing material to its basic components using testing methods including:

- **Chemical Analysis**
  - atomic absorption spectroscopy, carrier gas fusion, gas chromatography, liquid ion chromatography, classical chemistry, mercury analysis, thermal analysis, Fourier transform infrared spectroscopy, glow discharge mass spectrometry, DC-arc optical emission spectroscopy, X-ray fluorescence spectroscopy, UV-visible spectrophotometry, X-ray diffraction, ICP emission spectroscopy, ICP mass spectrometry, and microwave sample preparation

- **Surface Analysis**
  - scanning auger microprobe, electron spectroscopy for chemical analysis, scanning electron microscopy, and energy dispersive X-ray spectroscopy
Physical Testing

density (apparent, absolute, green, envelope, and immersion), SAS & Fisher number, flowability, fracture toughness (indentation), hardness, instrumented impact (Charpy), metallography, particle size distribution, surface area, room and high temperature tension/compression/compressibility, wear rate/coefficient of friction, and Zeta potential/Isoelectric point (IEP)

Distinguished Technology

An unique piece of equipment GTP has is the Astrum Glow Discharge Mass Spectrometer (GDMS) from Nu instrument. This instrument can be used for survey analysis. Also, capable of quantifying virtually all periodical elements from lithium to uranium and from matrix to sub part-per-billion impurity level. Recently, our lab developed and implemented new analytical methods by using GDMS, XRF, and microwave digestion for accurate determination of uranium and thorium concentrations in tungsten ores and sludge.

Our Materials Analysis facility has always been on the forefront of new testing methodology. Recently, GTP scientists developed a method for accurately determining uranium and thorium concentrations in tungsten ore and sludge. This breakthrough combines the power of several pieces of equipment/ methods using glow discharge mass spectrometry (GDMS), X-ray diffraction (XRF) and microwave digestion.

GTP’s Materials Analysis Laboratories in Towanda are accredited for chemical and mechanical testing by the American Association for Laboratory Accreditation. This accreditation recognizes that the laboratories, within the scope of their accreditation, meet the requirements of ISO/IEC 17025, “General Requirements for the competence of Testing and Calibration Laboratories.” Testing laboratories that comply with this International Standard also operate in accordance with ISO9001-2000. Additional information on this accreditation, including the scope, is available upon request. Accreditation and equipment combine to create one of the best equipped materials analysis facilities in the country.

Analytical services are available to other groups in the corporation and to outside customers.

For additional information, please see the attached laboratory brochure.