

*Chemistry
Services*

**NORTHROP
GRUMMAN**

Chemistry Services

Northrop Grumman's Chemistry Laboratories group at Space Park in Redondo Beach, Calif., offers a variety of services to customers in aerospace, automotive, electronics, energy, environmental, laser and materials technologies. At this Center of Excellence in Chemistry testing site, broad-based technical expertise and the most advanced instrumentation combine to meet specialized needs.

Nearly a third of the technical staff holds advanced degrees in chemistry, with others holding degrees in chemical engineering, mechanical engineering and material science. Because of this diversity, broad knowledge and extensive experience, the Chemistry Laboratories team communicates and works well with scientists and engineers of many disciplines. This approach to problem solving produces results of the highest quality.

The team supports engineering, manufacturing, and research activities for programs ranging from air and space to missiles and microelectronics. With the laboratories' diverse onsite resources, any type of chemical or hazardous material testing process can be developed to meet each customer's specific needs.

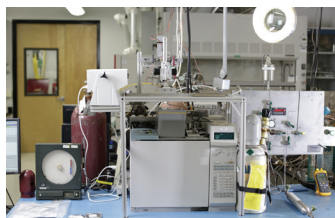
Customized Testing Services

The Chemistry Laboratories group works with precision equipment that can perform testing such as:

- Material characterization
- Chemical identification and concentration
- Failure analysis
- Contamination analysis
- Compatibility testing
- Thermal property measurement
- Gas mixture analyses
- Elemental identification and concentration



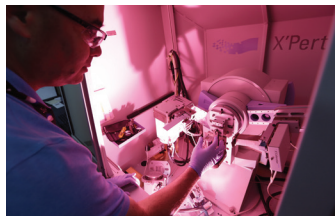
FTIR Spectrometer



Gas Chromatography



Thermal Analysis



XRD

Some of the laboratories' extensive array of advanced instruments and equipment include:

- Scanning electron microscopes
- Inductively coupled plasma mass spectrometry and optical emission spectrometry
- X-ray photoelectron spectroscopy
- X-ray diffraction
- Gas chromatographs with mass spectrometer detection systems
- Various chromatography systems

Versatile labs and large areas can be easily converted into resources for proof-of-concept prototyping. Examples of test equipment and process development tools include:

- Data acquisition and control
- Vacuum test chambers
- High speed video
- Fluid mechanics test beds
- Small rocket engine testing
- Lasers and optics

The team has worked with most major aerospace companies and Small Business Innovation Research awardees. The experience and technical expertise of the Northrop Grumman Chemistry Laboratories can help solve difficult problems by providing customized testing that gives customers the data and solutions necessary to succeed.



Scanning electron microscope with energy and wavelength dispersive X-ray



Large vacuum chambers with high capacity vacuum pumping systems able to simulate space and aircraft environments



XPS/Auger

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