



# High Throughput Center at BSEL

The High Throughput Center (HTC) at Pacific Northwest National Laboratory is a collection of instruments used to rapidly prepare, test, and analyze unique catalytic materials. Robotics and integrated software allow researchers to design complex studies that are conducted in parallel and on a small scale.

## High Throughput Advantages

-  Up to 50 Times the Experiments
-  Ground Breaking Discoveries
-  Improved Data Confidence
-  Enhanced Statistical Analysis
-  Highly Customizable Protocols
-  Dynamic Database
-  Material Cost Savings

For more information or a consultation, please contact:  
**Heather Job** 509-375-4529 | [heather.job@pnnl.gov](mailto:heather.job@pnnl.gov)

## Proven Track Record



Over 10 years of development means the HTC has tackled a wide variety of processes:

- » Catalytic Conversion
- » Synthesis Gas Upgrading
- » Product Adsorption Studies
- » Zeolite & Sol-gel Preparation
- » Process Condition Optimization
- » Air Sensitive Synthesis
- » Biological Screening



# HTC Areas Enabling Discovery

## Automated Material Synthesis

Robots execute standard laboratory techniques modified for small scale:

- » Solids handling
- » Liquid handling
- » Viscous & slurry pipetting
- » Sample filtration & washing
- » pH monitoring
- » Dilutions, daughtering, & derivitization



## Rapid Material Screening

Multi batch and fixed bed flow reactors expedite small scale material testing.

- » Ambient - 500°C
- » 20 - 3000 psig
- » Typical flow rates 5 – 15 sccm
- » Automated gas sampling.
- » On-line analysis.
- » Borosilicate, quartz, Teflon™, 316SS, Hastelloy® construction



## Advanced Analytics

Integrated data collection empowers scientists to discover key links between catalyst structures, experimental parameters, and reaction mechanisms.

- » Diverse analytical techniques
- » Real time data output
- » Multivariable data visualizations

