# High Throughput Center at BSEL

Pacific Northwest NATIONAL LABORATORY
*Proudly Operated by Battelle Since 1965*

**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

## 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

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

# HTC Areas Enabling Discovery

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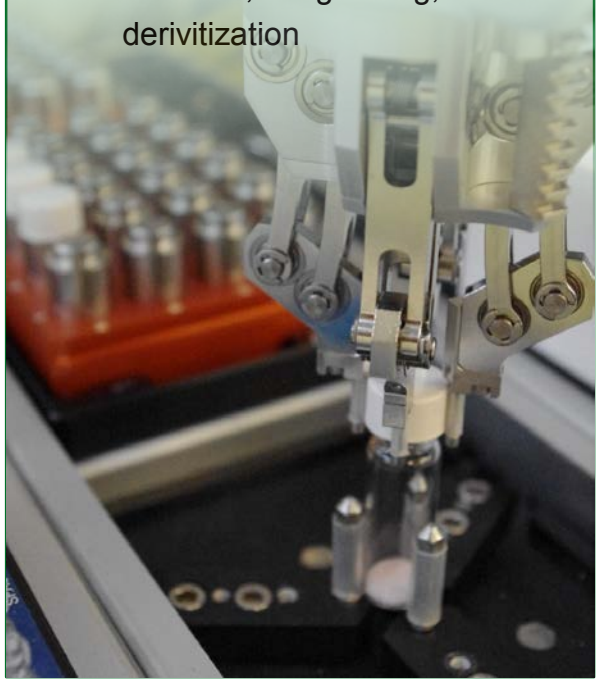
## Automated Material Synthesis

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