

**FOCUS ON: [ Polymer Formation/Thermoelectric Promoter For Catalysts/Service/Events ]**

**Polymer Formation Reactions With The PolyBLOCK Including Distillation Under Vacuum**



There are several classes of transformations in chemistry that require harsh reaction conditions to achieve the desired reaction. These classes of reactions include complex molecule synthesis, such as polymer formation reactions e.g. polycarbonates. We have recently provided a solution that reaches and maintains high temperatures up to 250 °C using our PolyBLOCK 4 reactor platform in the following configuration:

- | 500 ml glass reactor with PTFE lid
- | Overhead direct agitation (0-1000 rpm)
- | Thermal control of the system via temp probe (-40 °C to 245 °C)
- | Online monitoring and adjustment of the reaction conditions via our WinISO software.

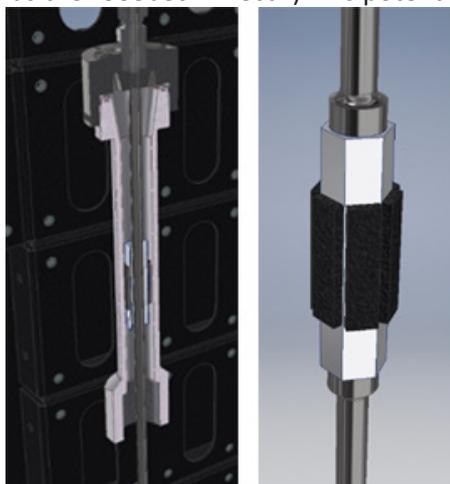
The lid has two ports that provide the option of allowing vacuum distillation (with monitoring of the condenser temperature) and drying of the final product through connection with a vacuum pump (3 mbar lowest vacuum achieved), all whilst monitoring and controlling the desired temperature. Extra reaction ports are available for sampling and addition of reagents.

**Novel Application Of Thermoelectric As A Support and Promoter For Catalysts**

HEL is working on a joint venture with Exergy and Cranfield University for the thermoelectric promotion of catalytic activity.

Dr. Zhaorong Huang has pioneered a new application of thermoelectric materials as a promoter of catalyst by sintering and pressing a mixture of metals to produce a ceramic plate which composed of BiCuSeO.

This material generates an electrical potential when there is a temperature gradient through the material (known as the “Seebeck Effect”.) This potential is transferred onto the metallic catalyst coated on the surface of the material



(such as platinum), increasing its catalytic activity by over 9000 times. This has been proven by Cranfield University in respect to the reduction to carbon dioxide to carbon monoxide.

HEL’s role is to integrate this technology into a commercial platform, and scale-up the research work already done by Cranfield University. We were selected, due to our extensive work and experience in control of heating in pressured flow chemistry.

BiCuSeO PLATED CUSTOM REACTOR INSERT

**Equipment Servicing Will Save You Money & Time**



All HEL equipment is robust and designed to give many years of reliable service however we strongly recommend that all of our equipment is serviced annually.

Your benefits include:

- | An annual service is required to ensure that your system is in good, safe working condition and limits wear over time.
- | Annual servicing ensures your system is working optimally and efficiently. A system that isn't running efficiently may be costing your company money.
- | Importantly, don't wait until you have a problem before arranging a service. If your system seems to be working well, it can be tempting to avoid servicing with the belief that there is no benefit. This can be a false economy. In reality, even if your system is working well, problems can build up over time. Waiting until your system breaks is likely to mean higher repair costs compared to an annual service.
- | Scheduling service at times when the system is not being used or used lightly can ensure full operation when workloads become heavier.

Our customer support team can arrange convenient service times. We offer a wide range of service options, from simple annual preventative maintenance plans to fully comprehensive service contracts. Please contact us to find out more.

**Events: More At <https://www.helgroup.com/events/>**

**16th-17th October**  
**Gulf Coast Conference**  
 Further details



<https://www.gulfcoastconference.com/>

Location: Galveston, Texas, USA

**31st October - 1st November**  
**Lab Innovations**  
 Further details



<http://www.easyfairs.com/lab-innovations-2018/lab-innovations-2018/>

Location: Birmingham, UK

**26th-27th November 2018**  
**Batteries, Super Capacitors, Fuel Cells & EV's Seminar**  
 Further details:



<https://helgroup.com/marketing/batteries-and-fuel-cell-seminar-26th-27th-nov-2018/>

Location: HEL HQ, Borehamwood, UK