



For immediate release

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## **UD's Catalysis Center for Energy Innovation Invents New Chemical Detector**

(NEWARK, DE) January 12, 2015 -- A team of researchers at the University of Delaware's [Catalysis Center for Energy Innovation](#) (CCEI) recently invented the Quantitative Carbon Detector (QCD), a new device that identifies and quantifies chemical compounds in complex mixtures, such as fuels, oils, chemicals, pharmaceuticals and food. This instrument will have a significant impact on the amount of time required for chemical analysis.

The Center's research focuses on discovering new technologies for the production of renewable fuels and chemicals using lignocellulosic (non-food) biomass as feedstocks. A major challenge in the catalytic conversion of biomass to fuels is the molecular transformation that requires detailed and simultaneous characterization of complex mixtures containing hundreds of chemical compounds.

"The QCD is really the holy grail of chemical analysis," says Paul J. Dauenhauer, associate professor of chemical engineering and materials science at the University of Minnesota and co-director of CCEI. "Utilizing this new technology allows us to focus our effort on catalytic science rather than tedious and expensive chemical calibrations."

Using an integrated microreactor design, multiple catalytic reactions break down complex chemical mixtures into single compounds, significantly reducing the time and effort required for characterization analyses. Microchannels that surround a built-in heating system allow for high-resolution chemical detection as well as integration of hardware and software within existing chemical analysis devices.

The research was published in the January 2015 issue of the journal *Lab on a Chip*, a publication of the Royal Society of Chemistry.

"A major challenge in any energy and fuels laboratory is identifying the chemicals within liquid substances," says Alex Paulsen, CCEI researcher and co-inventor. "After being identified, each compound must be quantified, and this can be a time-consuming procedure for complex mixtures. By breaking down the mixtures into single compounds, the QCD simplifies the process so we have more time to focus on research."

This new technology, Polyarc™ QCD, is currently being developed by [Activated Research Company](#) (ARC), a new start-up based in Minnesota. Pre-orders for the device are being accepted.

### **About the Catalysis Center for Energy Innovation**

The Catalysis Center for Energy Innovation (CCEI) is a multi-institutional research center at the University of Delaware established in 2009 through a grant from the U.S. Department of Energy. one of 22 centers. The Center builds upon the long tradition of novel catalytic research at the University's Center for Catalytic Science and Technology (CCST) and brings together 20 principal investigators and approximately 40 graduate students and postdoctoral researchers from 10 institutions nationwide to tackle the challenges of heterogeneous catalysis. CCEI focuses its research efforts on developing catalytic technologies for sustainable energy applications through a spectrum of processes envisioned in a future biorefinery. Its research drives the science and technology that can lead to the conversion of cellulosic (non-food based) biomass and its derivatives to fuels and chemicals.

For more information, please visit <http://www.efrc.udel.edu/>