The *TranLIVE Spotlight* is a bi-weekly update from the University Transportation Center research collaboration led by the University of Idaho

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PROGRESS IN CATALYTIC IGNITION FABRICATION, MODELING AND INFRASTRUCTURE

MOSCOW, Idaho – TranLIVE researchers, J. Steciak, S. Beyerlein, R. Budwig, D. Cordon, and D. McIlroy, at the University of Idaho's National Institute of Advanced Transportation Technology (NIATT) have made progress in examining the use of platinum-coated nanospring wires in catalytic combustion. In a recent report, the University of Idaho researchers measured the temperature of the nanospring wires in a simulated catalytic system in order to determine its practicality compared to traditional platinum based catalytic systems.

According to researchers nanosprings have a considerable advantage over traditional wire systems in acting as a catalyst as the coiling of the wire provides a larger surface area for the reaction to take place. The significant benefit to the automotive industry is what prompted research and testing of nanosprings. Testing nanosprings requires measurements of the temperature of the wire to find the temperature at which surface reactions are triggered, as well as the heat caused by the reactions. In this specific research researchers took five separate measurements using a 0.1 amp current, 0.5 seconds apart for ten seconds with a four-second current head-start to avoid possible spikes. Existing literature traditional catalytic materials suggests a linear fit of resistance versus the temperature of platinum.

After running the analysis, Steciak, Beyerlein, Budwig, Cordon, and McIlroy found the results deviated from the original assumed linear relationship at both high and low temperatures. They suggest that at high temperatures deviations from expected values may be due to insufficient radiation shielding or conditioning. In addition, they note that there were too few data points at low temperatures to allow for definite conclusions to be made. These unexpected findings requires further testing to be done before further research on nanosprings as a catalyst can be definitive, but future research remains promising.

The complete report is available at: bit.ly/**tranlive102014**

ABOUT TRANLIVE UNIVERSITY TRANSPORTATION CENTER

TranLIVE is the Transportation for Livability by Integrating Vehicles and the Environment a research collaboration lead by the University of Idaho in partnership with Old Dominion University, Syracuse University, Texas Southern University, and Virginia Polytechnic Institute and State University. TranLIVE works to find solutions to transportation challenges that minimize environmental impacts while educating students to enter the transportation workforce and creating and transferring tools and knowledge to practicing transportation professionals. TranLIVE is sponsored by the United States Department of Transportation (USDOT) University Transportation Centers Program. For more information visit: **www.tranliveutc.org**