

CeRCaS News Blast 11/7/17

Ring 1: The awards keep coming!

Shortly after his election to the National Academy of Engineering, John Monnier was awarded the 2017 AIChE Chemical Reaction Engineering Division's Practice Award for his work in epoxidation catalysis. A standing room only session was held in his honor at the Annual AIChE Meeting in the Minneapolis Convention Center. Prof. Monnier was on his best behavior.



CRE Practice Award Session participants from left: Lars Grabow (Houston, coChair), Paul Barger (UOP), Aditya Bhan (Minnesota), Our Man Monnier, JR Regalbuto (coChair), Bob McCabe (NSF, Chair), Carsten Sievers (Georgia Tech), Raj Gounder (Purdue), and Joseph Holles (Wyoming).



VCU ENGINEERING'S MEDICINES FOR ALL AWARDED \$25 MILLION TO INCREASE ACCESS TO LIFESAVING MEDICATIONS

Frank Gupton (left) and Virginia Governor Terry McAuliffe at the August kickoff of the Medicines for All Center at VCU.

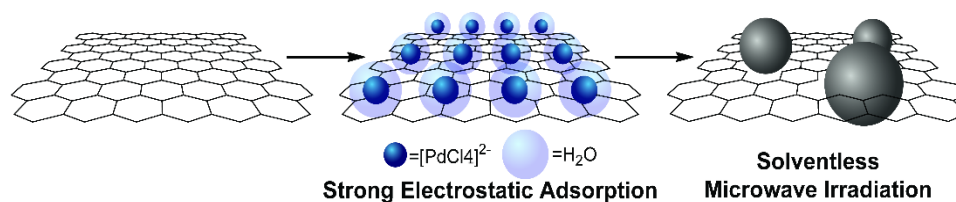
Not to be outdone, Frank Gupton's team was awarded \$25 million from the Gates Foundation for his Medicines for All (M4ALL) center, whose mission is to improve access to affordable, high-quality medicines. This is done by reducing the cost of active pharmaceutical ingredients through among other things – better catalyst synthesis.

Oh, and in the process of kicking off his center, Frank learned of his reception of one of the two nationwide 2018 ACS Awards for Affordable Green Chemistry. Who will be next to top that?

Ring 2: High impact research results keep coming!

Look for CeRCaS in an upcoming issue of Chemical Engineering Progress (CEP). Prakash Balan, our NSF Program Director, is editing for CEP a story on a CeRCaS discovery epitomizing our center's synergy. An improved Pd/graphene catalyst employs USC's metal deposition method with VCU's pretreatment to yield a highly active catalyst with potential for commercialization. Here's a draft of the lead-in of the story.

Improving Pharmaceutical Processing with Palladium/Graphene Catalysts

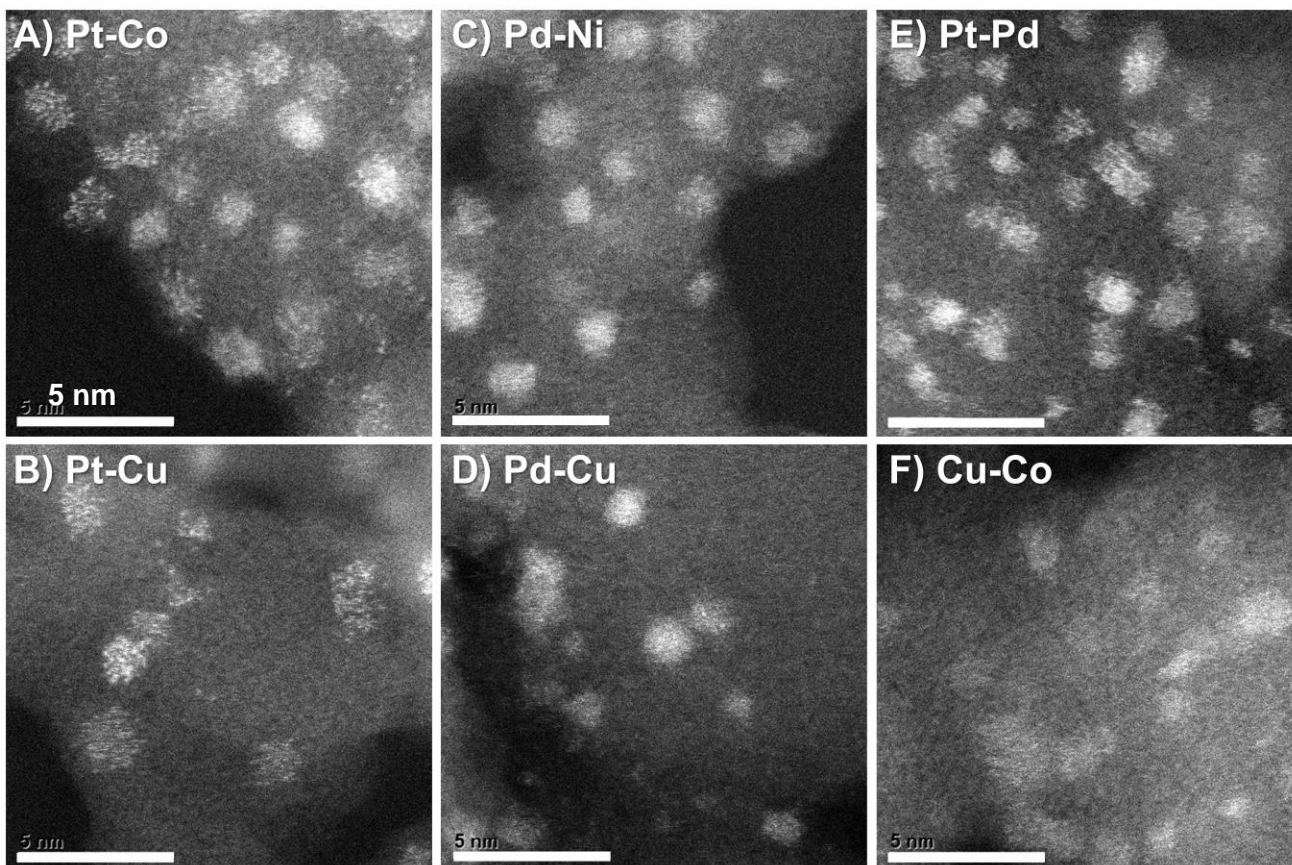


Graphic illustrating the strong electrostatic adsorption with solventless microwave irradiation (SEA-MW) method to simultaneously form ultrasmall palladium nanoparticles and holes in graphene. Palladium supported by graphene defects exhibit exceptional catalytic activity for pharmaceutical reactions such as Suzuki cross-coupling.

Also look for results from a CeRCaS-related project in Science (the paper will appear in print 11/22 and will appear first online). You saw it here first. Using simultaneous strong electrostatic adsorption (co-SEA), ten different pairs of homogeneously alloyed bimetallic nanoparticles have been prepared on a silica support. The average size of all particles is about 1 nanometer!

	Co	Ni	Cu	Pt	Pd
Co	0.86Co	0.94Ni/0.97Co	0.70Cu/0.66Co	3.2Pt/0.8Co	0.7Co/1.3Pd
Ni		1.84Ni	0.89Cu/0.63Ni	2.6Pt/0.79Ni	0.52Ni/1.2Pd
Cu			2.25Cu	2.2Pt/0.94Cu	1.0Cu/2.1Pd
Pt				0.95Pt	1.31Pt/0.7Pd
Pd					1.27Pd

Wt%
Nominal loading:
1:1 atomic ratios



Remember, all members are welcome on all monthly update calls.

Update Links	Project	Principal Investigators	Industrial Mentor	Reports	Call In*	Next Date**
<u>Project 7</u>	Statistical design for guided nanoparticle synthesis	Lauterbach Wen (USC)	Deutsch (BASF)	Second Thursday (Afternoon)	1 800 753- 1965	11/9 1:00 PM
<u>Project 8</u>	Fundamental Studies of Pd/Graphene for Cross Coupling and C-H activation	Ellis Gupton (VCU) Williams Chen Regalbuto (USC)	Soled (ExxonMobil) Fundrick (BI)	Second Tuesday (Afternoon)	1 800 753- 1965	11/14 2:30 PM
<u>Project 9</u>	Continuous production of Supported Monometallic and Bimetallic Catalysts for Methanol Formation	Carpenter Tang (VCU) Monnier (USC)	Barger (UOP) Devlin (Afton)	Third Tuesday (Morning)	1 408 638- 0968 US TOLL	11/21 10:00 AM
<u>Project 10</u>	Catalytic Upgrading of Hydrocarbons by Selective Oxidation	Khanna (VCU) Adams Williams (USC)	Weiss (ExxonMobil)	Third Thursday (Afternoon)	1 800 753- 1965	11/16 2:30 PM
<u>Project 11</u>	In situ XRD to study the effects of temperature and gas phase on the stability of monometallic catalysts and structure/stability of bimetallic catalysts	Carpenter (VCU) Monnier (USC)	McMillan (Eastman) Diao (INL)	Fourth Tuesday (Morning)	1 800 753- 1965	11/28 11:00 A

Ring 3: Come south for a spell!

The Fall CeRCaS meeting will be held December 14-15 (Thursday and Friday) at the Hilton Columbia Center, a block away from “restaurant row” and two blocks west of the Capital Building. Superb amenities, comfy rooms. Discounted rates are \$134 for the nights of Dec. 13-15. Call 803 744-7800 and mention “CeRCaS” to get the group rate.

The meeting will begin 7:30 a.m. Thursday and conclude at noon, Friday. Come early Wednesday for a round of golf! A detailed meeting agenda will be distributed soon.



For more information:

<http://www.che.sc.edu/centers/cercas/>