

CeRCaS News Blast 3/9/21

Ring 1: CeRCaS continues to grow!

We expect to hear soon from the National Science Foundation of the official awarding of CeRCaS' joint third site at UC Berkeley/UC Davis, which has been championed by Prof. **Alex Katz** (left) at Berkeley



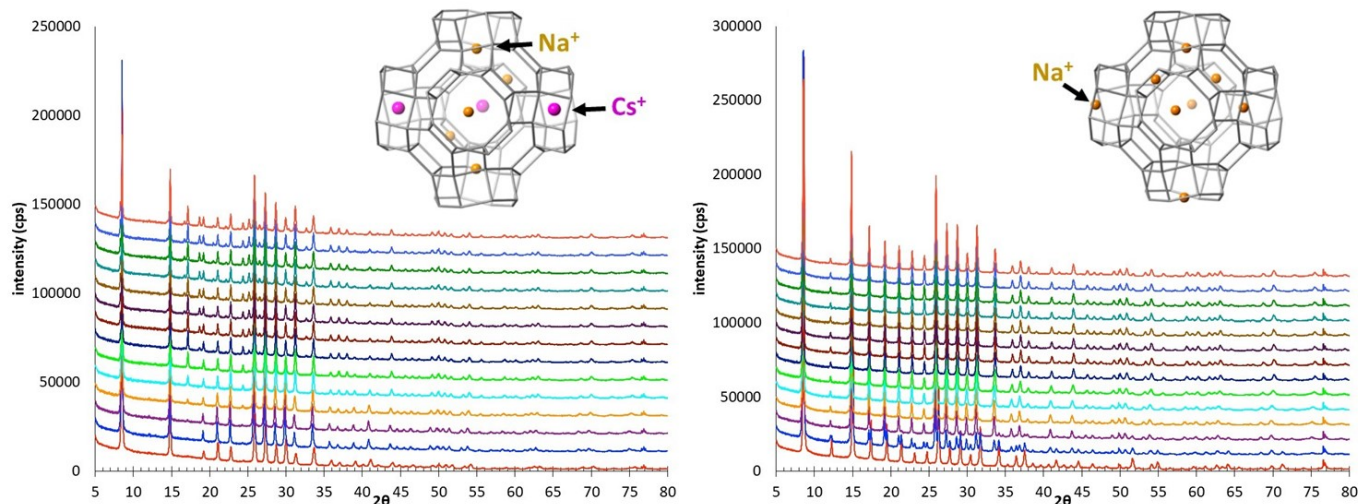
and Prof. **Bruce Gates** at Davis. Alex and colleagues, who have helped to attract several new members in the last few years including Chevron, Mitsubishi, NICE America and ADM, are currently involved in four of our current projects (see www.che.sc.edu/centers/cercas/), of which three involve collaborations with other CeRCaS sites. To UofSC's broad expertise in supported nanoparticle synthesis and VCU's expertise in syntheses and evaluations for pharmaceutical applications, UCB/D adds expertise in synthesis of zeolite and metal containing zeolite materials.

And Berkeley/Davis is only half the story. **Jean-Sabin McEwen** (right) at Washington State University has been hard at work to have WSU join CeRCaS as a fourth site, contributing expertise in electrochemical catalysis/catalyst synthesis and environmental applications. WSU recently received from NSF a waiver for a planning grant (which delays the process of joining as an additional site by about a half year), as UCB/D had received last year. WSU's "planning meeting" will fold into our Spring meeting (see below) and we welcome the companies which WSU is recruiting as guest participants.



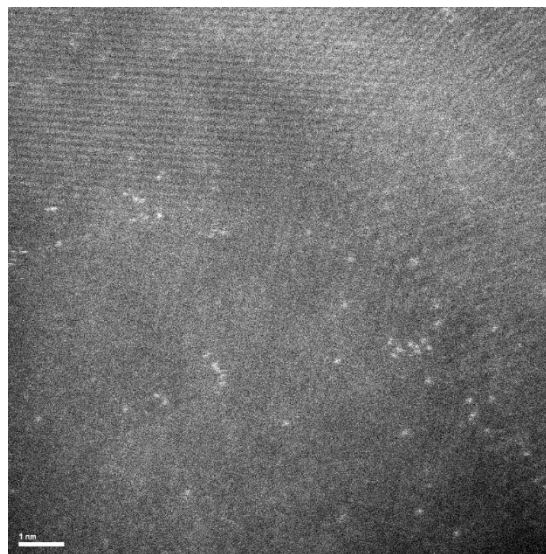
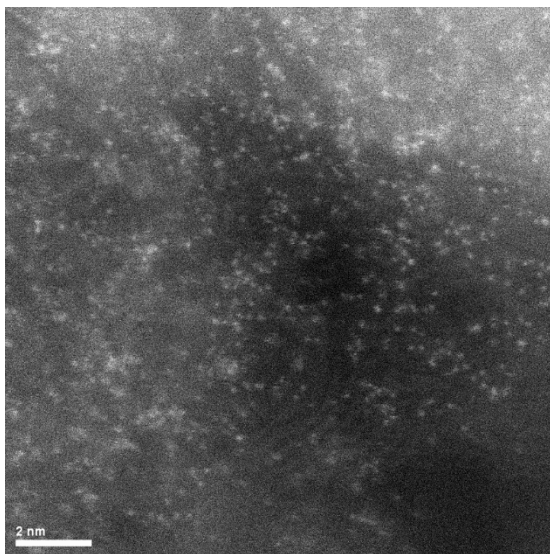
Ring 2: The Hits Keep Coming.

A great example of the multidisciplinary, collaborative research being conducted in CeRCaS is Project 31, Multicomponent H₂O-CO₂ Adsorption in Zeolites, in which cation-doped zeolites synthesized by Alex **Katz** are being analyzed by John **Monnier** using his in-situ x-ray diffraction instrument, and the unique ability of Cs-containing materials to adsorb CO₂ in the presence of water vapor is being computationally interpreted by UCB's Ambarish **Kulkarni**. Details of this work will be presented in the Project 31 update on Day 2 of the Spring meeting (see Ring 3).



In-situ PXRD data on cation-substituted RHO zeolites during hydration in studies of humid CO₂ adsorption in Project 31. The data demonstrate phase changes occurring in the zeolite as a result of cation motion and water adsorption, which is tied in crucially with humid CO₂ adsorption.

Another exciting discovery in center-related research is development of a new method to anchor isolated atoms of a catalyst metal at heretofore unachievably high metal loadings. Grad students (and husband/wife team) Nabi **Shakouri** and Horie **Adabi**, working with Profs. **Regalbuto**, **Williams** and **Mustain** at UofSC, have dubbed their method “Chelate Fixation.” The details of this method will be divulged during the Lightning Round of Student Posters on Day 3 of the Spring Meeting (see Ring 3).



Isolation of Pt atoms via Chelate Fixation of left) 3.5 wt% Pt on Vulcan XC72, and right) 1.9%Pt on titania

Ring 3: Virtual Spring CeRCaS Meeting (March 17-19th, 2021).

Seen any fascinating catalyst synthesis data recently (see above) that would pique your interest in the Spring Meeting of the Center for Rational Catalyst Synthesis? Our 2021 Spring meeting will be held virtually via Zoom from Wednesday morning, March 17th, to Friday afternoon, March 19th. Our ten current projects will be updated by the students who performed the research (it’s a recruiting bonanza!), we’ll hear project pitches from WSU faculty, which will be judged by the panel of member and guest companies, and we’ll meet in detail several of our member companies. A detailed meeting agenda will be distributed soon. Guest participation requires the completion of a non-disclosure agreement, which we are happy to provide.

For more information:

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