

James R. Fair Process Science & Technology Center



Summer 2019 Newsletter

Note from the Program Head

<https://sites.utexas.edu/pstc/>

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We have asked Lauren to do a couple things this summer which will hopefully enhance our interaction with the PSTC sponsors: She will be asking our company primary contacts to review our email contact list. This will get us up-to-date and will reduce the burden associated with the primary contacts being our main conduit for PSTC information. She will also be conducting a survey of all our company contacts to obtain feedback on the sponsors' meeting. It would be safe to say Frank and I were disappointed with the short course participation during the last meeting and our overall meeting attendance is not where I would like it. The survey will help us understand the constraints associated with getting sponsors to the meetings and will give us feedback on ways to enhance the meeting structure to provide the most value to our sponsors. As always, our goal is to align the sponsors' interests with the program capabilities and your help in doing this is much appreciated.

I will mention this several times over the next six months, but the Fall 2019 meeting will be held on the main UT campus, not at the research center. During the early days of the SRP, alternating locations was a common practice (Dr. Fair thought it was important that our sponsors be exposed to research activities on the main campus as well as at the Pickle site). In addition to the added exposure to our on-campus colleagues, a main campus meeting will also show off our new engineering facilities which are quite impressive. The working

plan is to have a one-day meeting on October 15th and allow time before and after the meeting for one-on-one discussions with various research groups.



This newsletter contains profiles of our two SRP technicians. We have been very fortunate throughout the 35-year life of the program to have had outstanding technical support for experimental activities. Jamie and J.R. continue this trend and we are very glad we have them as members of the program. I will also add that Frank's commitment to hiring ex-military personnel has been a positive in multiple directions.

Finally, I would like to thank all our company contacts for working the PSTC sponsorship documents through the renewal process. It appears we will gain one or two new sponsors in 2019 / 2020 which is certainly a positive outcome.

Best wishes for a safe and enjoyable summer,

Bruce

SRP Update: Frank Seibert



The SRP pilot facilities continue to undergo modifications for enhanced capabilities and longevity. The distillation piping has been modified to allow for hydrocarbon hydraulic characterization similar to those obtained with the Air/Water column. A new Fractal liquid distributor, donated by Amalgamated Research Incorporated will provide a flow range of 5 to 40 gpm/ft². In addition, the entire column and bottoms piping have been re-insulated.

The 32-year-old carbon steel cooling water piping was experiencing significant corrosion. The original piping has just been replaced with 304 stainless piping. The project was co-funded by the Cockrell School of Engineering (CSE). The CSE has also agreed to fund insulating the new piping and is providing over \$75K to this important upgrade.



New Fractal Liquid Distributor



Original Carbon Steel Cooling Water Piping



JP3 Verax System

The collaboration with JP3 Measurements continues with a second validation trial in late June. JP3 Measurements has provided two NIR Verax Laser sensors. Additional technical information may be found from the link <https://www.jp3measurement.com/technology/>.

Oldershaw distillation activity continues to be strong with multiple projects extending into the fourth quarter of 2019. Interest in oil/water membrane separations continues to increase with more than four projects planned in 2019. The applications range across many industries.

Future 2019 SRP pilot plant and lab scale operations will include:

- ◆ Oldershaw Distillation Studies
- ◆ Distillation Random Packing Characterization
- ◆ Air/Water Packing Characterization
- ◆ Effect of Temperature, Interfacial Tension, Surfactants, and Varying Oils on the Oil/Water Membrane Separation

In the News

Dr. Jovan Kamcev Wins the 2019 Henkel Award



Dr. Jovan Kamcev, Freeman Group alumnus, has been awarded the 2019 Henkel Award for Outstanding Graduate Research in Polymer Science and Engineering.

Kamcev earned his B. E. in Chemical Engineering and Applied Math & Statistics from Stony Brook University in 2012. He re-

ceived his Ph. D. in Chemical Engineering at the University of Texas at Austin in 2016, working on theoretical and experimental studies of ion and water transport for ion-containing polymer membranes for water and energy applications.

Kamcev is now a postdoctoral research associate at the University of California, Berkeley, working with Dr. Jeffrey Long in the Department of Chemistry.

[Click here to read the full article.](#)

Better Water Treatment in the Works at M-WET



Dr. Benny Freeman, PSTC PI, is heading up the [Center for Materials for Water and Energy Systems \(M-WET\)](#) as it works on better, polymer membrane-based water purification technologies. Many locales, both in the U. S. and

abroad, have had trouble keeping fluoride levels

safe and stable, leading to increased contamination of ground water. Traditional water purification processes remove all ions, even the beneficial ones (e.g., sodium and calcium), but Freeman and the M-WET are working on membranes containing metal-organic frameworks with selective ion channels that filter out the undesirable elements.

[Click here to read the full article.](#)

Staff Spotlight: JR Campos & Jaime Church

In this issue we are profiling the PSTC's two full-time technical staff assistants, JR Campos and Jaime Church, who joined the group in Fall 2017.

JR Campos

JR Campos hails from Brownsville, Texas, where he attended St. Joseph's Academy. While in the U. S. Navy, he trained as an Aviation Electrician's Mate, working on and off the flight line on different types of naval aircraft's electrical and instrumentation systems. This experience fired his love for trouble-

shooting "electrical gremlins" and getting the planes back in the sky.

Campos eventually decided to move to Austin from San Diego to be closer to his family. He worked with Orion, an organization that assists veterans in transitioning their skills from a military to a civilian profession, and soon landed the tech position here at the PSTC. His first major project was the upgrade to the DeltaV system to install thin clients to remotely communicate with the virtualized control system. Emerson provided on-site training to manage the virtualized cluster domain.

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Staff Spotlight cont.



Campos is currently working on the installation of a system to test 48-CHARM CTO enclosures with different options (e.g., sun shades and reflective paint) to measure and mitigate the effect of nature—direct sunlight, UV radiation, wind, etc. —on the inside

temperatures of the enclosures. The team is also working with Emerson to test a prototype for future DeltaV capability integrating a smart search feature to assist plant operators and engineers. The ability to quickly and efficiently track down valuable assets from any remote client terminal without use of multiple programs is a priority.

When not hard at work, Campos enjoys a variety of art, literature, and music, and he enjoys spending his free time with his girlfriend, his daughter, and their Chiweenie KO and Persian cat, Gizmo. With his family’s support, each and every day he brings a mindset of persistence and know-how and a sense of pride in his work—attributes that serve him well as one of PSTC’s technical staff.

Jaime Church

Born and raised in Victoria, Texas, Jaime Church attended the Naval Nuclear Power School and Thomas Edison State University where he earned an associate’s degree in mechanics and maintenance. Drawn to his work in the U. S. Navy, Church enjoyed working with his hands, spending time as a

submarine mechanic and a propulsion plant operator.

This experience served Church well as he looked for work outside of the military. He had wanted to do something interesting, a job that entailed working on different projects all the time and challenged him daily. Upon arrival at the University of Texas at Austin’s PSTC, his first major project was performing packing testing in the distillation pilot plant.

Church is currently at work on replacing all of the original carbon-steel cooling water piping, installed over thirty years ago, with stainless-steel piping. He is also working with the team to prepare for conducting several distillation packing tests once the piping change-over has been completed.

Outside of work, Church reads widely and enjoys learning about alternative energy, nuclear power, and environmental research. He loves spending time with his daughter and working on building projects in his garage. He is also hard at work pursuing an associate’s degree in tech code welding at Austin Community College.

The Process Science and Technology Center and the Separations Research Program are fortunate to have found two highly talented, motivated, and hard-working technical staff to support all the research work we are doing in distillation and separations!

Publications

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El-Halwagi Group

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Publications cont.

El-Halwagi Group cont.

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Publications cont.

El-Halwagi Group cont.

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Sponsor Survey: We Want to Hear From You!

The PSTC is in the process of updating our annual sponsors’ meeting format and we have created a survey for all of our sponsors to weigh in on how to proceed. [Please click here to access the survey](#) or copy and paste the following URL into your preferred browser:



<https://forms.gle/RM8Rr93FpTpQ9JLbA>

Fall 2019 Meeting

Please join us for our annual PSTC Fall Meeting, scheduled for Tuesday, October 15, 2019, here at the University of Texas at Austin. **This year we will be at a different location: the new Engineering Education and Research Center (EER) located on the main UT Austin campus downtown.**

[Registration](#) and [accommodation](#) information will be available later this summer on our website. Handouts of the presentations will be available for attendees; pdf copies will be posted on our website closer to meeting time.

Questions? Please feel free to contact us:

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