Anton Paar



– CUSTOMER SUCCESS STORY –

The Chemical Composition Analysis Lab at California State University, Los Angeles

Academia and Anton Paar: Analyzing Complex Chemical Compositions for a Range of Applications

Introduced to Anton Paar instruments during his bachelor's degree and now using them as an assistant professor in the chemistry and biochemistry department at California State University, Los Angeles, Petr Vozka has had a long professional relationship with Anton Paar. Now, at the Complex Chemical Composition Analysis Lab, he uses Anton Paar instruments to analyze complex chemical mixtures for a range of applications, including for developing alternative jet and green diesel fuels.





California State University's Complex Chemical Composition Analysis Lab manages its day-to-day work with Anton Paar instrument.

Petr Vozka is an assistant professor in the chemistry and biochemistry department at California State University, Los Angeles. Since he joined the department two years ago, he has built up the Complex Chemical Composition Analysis Lab, which focuses on analyzing complex chemical mixtures. Before moving to California, Vozka helped develop a lab at Purdue University where he also used several instruments from Anton Paar, including the SVM 3001 and the TAG 4 flash point tester.

Vozka and his colleagues are currently using Anton Paar's SVM 3001 Cold Properties viscometer to analyze alternative jet and green diesel fuels. The primary reason Vozka purchased the instrument is that he's researching how the freezing point of alternative fuels is affected by their chemical composition.

"We had a manual freezing point," Vozka says. "It takes a lot of time, and the results are significantly affected by the operator; thus, having experience is essential. Since my lab has primarily undergraduate students, it wasn't easy to find students who would be experienced enough, precise, and accurate. And so we decided to purchase the SVM 3001 Cold Properties. It's a great and straightforward instrument. You can basically inject your sample, and by using Anton Paar's general method, you'll receive a result with high accuracy. If you want to save time and you know where you should expect your freezing point, you can adjust the method by setting up a lower temperature closer to the expected freezing point.

"However, if you don't know where to expect the freezing point, you can set up a general method at, let's say 20 °C or 0 °C, and you'll still get the accurate result. That's a great benefit, and that's how my students are learning. Because if they want to save time, they need to adjust the method, which can save them (sometimes) even 30 minutes or so."

"Anton Paar instruments are extremely user-friendly. With just a few buttons, you can set up and adjust the methods. Very simple."



Jet fuel analysis with SVM 3001 Cold Properties.

Vozka first came to know Anton Paar instruments when studying for his BS at the University of Chemistry and Technology, Prague: "They had, and still have, multiple Anton Paar instruments, and so I was familiar with those, I knew it was a 'big deal' company as everyone in industry and academia knows about Anton Paar."

At Purdue University, he suggested purchasing two Anton Paar instruments, including the SVM 3001. "The focus was on how mixing the alternative fuel blending components with petroleum-based jet fuel would affect their properties," he explains, "so we always needed to measure density and viscosity. We published a paper on how to predict jet fuels' density at 15 °C using the chemical composition – and again, we used your SVM 3001. We measured many densities at 15 °C, we also measured the chemical compositions for the samples, and then we developed a correlation between those two."

Vozka's PhD and post-doctoral research at Purdue was funded by the U.S. Navy: "We were working with them on the chemical composition of alternative fuels because back in 2020, the main goal of the U.S. Navy was to generate 50 % of its energy from alternative sources and not from petroleum-based fuels."

When Vozka moved to California State University, Los Angeles, "it was already a done deal" that he would be buying instruments from Anton Paar. "Anton Paar instruments are extremely user-friendly. With just a few buttons, you can set up and adjust the methods. Very simple."

At California State University, Los Angeles, Vozka's team analyzes fuels from the U.S. Air Force. "We want to understand how the freezing point is affected by the chemical composition of the fuel. So, for example, we take the alternative jet fuels and spike them with different n-alkanes to see how these concentrations affect the freezing point. What

we'll be doing in the next few months is seeing if we can mix alternative (or green) diesel with alternative jet fuel and still satisfy all the properties jet fuels need to meet, the most problematic of which is the freezing point. For that purpose, we're focusing on the freezing point, but we're also collecting the density and viscosity data because these are also required by ASTM."

Of the purchase process that lead to Anton Paar, Vozek says:

"Anton Paar has been on the market for a long time. If I need anything, I order it, and it's here in a few days. If I need help with the instrument, there's always someone there."

"When I start looking for a new instrument, I always start with companies I know. And I worked with many Anton Paar instruments in the past; therefore, if I need an instrument for fuels' physical properties, I know that you have been in the fuel business for a long time, and so I start with Anton Paar first, and then I look at different vendors.

"Usually, what I compare is the price, but that's not always the key element. Some instruments are a little bit cheaper, but none of my colleagues or collaborators would have heard about these instruments or these companies. Since I'm not buying something for myself but for the lab or the university, I want to be sure it will still work in at least five to ten years and that I still have customer support. Customer support is crucial for me. I know how Anton Paar operates; starting with the installation, you're always available. If there's a problem, you'll take the instrument back to the lab and with no question, you'll repair it. You'll try to do it as fast as possible. So buyers should never forget about customer support.

"Some companies pop up on the market and start producing instruments. In two years, they're bought by a bigger company, and when you need to service the instruments, you need to go to the company that bought them, but that company doesn't service them, so you need to go to a third company and it's just madness.

"Anton Paar has been on the market for a long time. If I need anything, I order it, and it's here in a few days. If I need help with the instrument, there's always someone – you get their office or personal phones – and they always answer, and I always get the answers."

Vozka's lab has also started using Anton Paar's lab execution software, AP Connect.

"Normally," he says, "we just take the data from the screen, but we're planning on using AP Connect more often in the future as most of our instruments can be operated remotely."

Any Anton Paar instruments planned for the future?

"I would also love to have the PMA 5 flash point tester," he says. "That's something we also need for diesel and gasoline fuels."

Main points at a glance

INSTRUMENTS: SVM 3001 Cold Properties, SVM 3001, Tag 4 Flash Point Tester

SAMPLES: Diesel, jet fuel

MEASURED PARAMETERS: Viscosity, freeze point, cloud point, density