

Alyson Beldon PhD

Process Development Engineer

Why did you decide to join Air Products?

I graduated in 2009 when many companies were scaling back, so I was one of the fortunate ones to even land a job that was not a post-doc. That said, I was very excited to join Air Products. I was hired directly into the PRISM Membranes product development group and, having done my graduate work on membranes, I was excited to continue in the field. Additionally, PRISM Membrane technology pioneered the gas separation membrane industry, so I was excited to step in to such a prestigious history and be a part of future technologies.

Why do you love working at Air Products? What is it that keeps you working at Air Products?

I love the variety of roles that my job offers. My primary focus is product development, but I have a hand in process scale-up, manufacturing troubleshooting, and application development. Our research labs are housed in the same location as our manufacturing facilities. This cohabitation affords the opportunity to follow my ideas from the benchtop to the production floor. Seeing the full picture is very rewarding for me; not every research position offers this opportunity.

Our small group also allows me to be closer to the start of a new application or product. Instead of having to only gather information from sales or product managers, I can interact with potential customers myself to help define the specifications needed for a new product or process. Having a clear idea of what a customer wants or needs is extremely motivating, and having control over what direction the project takes is very satisfying.

I also feel like I have my hand in many different aspects of this company, and that there is always room to grow in each of these areas. The desire to learn more and master more is what keeps me returning each day to Air Products.

Please describe your career with Air Products to date.

Product Development Engineer – June 2009 – present

- Formulation development and material characterization of epoxy tubesheets used in hollow fiber membrane modules
- Explored the use of current products in new applications and evaluated their performance and material compatibilities
- Trained technicians to use various analytical equipment
- Provided technical support to help solve manufacturing issues

How does what you do contribute to sustainability?

I have used my analytical skills to partner with a plant engineer to evaluate the effects of reducing makeup flow rates in our spin baths in an effort to conserve water. I developed a UV-vis method to measure bath water solvent level. Using this method, the plant engineer determined that we could reduce our water rates by over half without impacting our product.

I also helped to promote the push for green energy solutions by our customers with my biogas application development work. Biogas upgrading using membranes is gaining traction in the green energy realm. I did the initial evaluations on our product to ensure that our current product configuration would hold up under the operating conditions needed for biogas upgrading. Being a part of technology development aimed at reducing greenhouse gas emissions is immensely satisfying.

Finally, I played a large role in helping to land a multi-year, multi-million dollar contract with Boeing. I performed extensive and thorough characterization tests to convince Boeing that our product would not fail during service. Their experts were quite demanding but, in the end, I answered all of their questions and helped put the issue to rest.

What is the most intriguing/satisfying thing you've been involved in since you've been at Air Products?

The most satisfying achievement in my career to date is developing a new casting formulation for one of our production steps. My formulation cut the cost and cycle time by half, plus the operators find it easier to use than the previous materials. It has been used in full production for over nine months and has recently been successfully scaled up to another larger product.

One of the coolest things that has happened to me was a trip to visit a biogas pilot plant in Lillehammer, Norway. We spent two days at a landfill, in 30° temperatures, with snow on the ground, and it was awesome! We were there to evaluate how our product performed in a real feed stream. I was finally able to see a system in person and not just as a P&ID drawing. We changed variables such as flow rate and membrane configuration to see how the system responded. The data that we collected were used to validate the simulations that had already been run.

What career advice would you give to those just starting out in their engineering career?

Be patient. You know your capabilities, but those around you do not. If you consistently do your best and do good work, you will soon gain the respect and trust of those around you.