

Practical higher education for industry

Technology is the ultimate industry driver, and one essential ingredient is having the resources to take a concept and make it reality. For cable manufacturers, that means having to make sure that their new products will pass code and performance requirements. As top-end sophisticated testing equipment can be cost-prohibitive, some manufacturers have partnered with higher education. Below, Dr. Paul Nahass, director, Industrial Affiliates Program (IAP), of the Institute of Materials Science at the University of Connecticut, discusses how the school has been able to serve as an industry resource.



Dr. Paul Nahass

WJI: When did UConn's Institute of Materials Science start IAP?

Nahass: IMS launched IAP in 1974 to provide convenient access to resources at the Institute of Materials Science (IMS) to assist industry with short-term, materials-related research, development and production projects.

WJI: How has the program grown over the years? Has the scope of what you offer expanded much?

Nahass: IAP has over 30 member companies, from startups and companies with less than 20 employees to multi-nationals with tens of thousands, such as GE and Pfizer. I'd classify most of the wire and cable companies as medium-sized. Most of them are based in Connecticut, with a few scattered throughout other parts of the Northeast. The

basic premise remains the same, although the IMS facilities have expanded and the types of R&D projects have changed. One thing we do a lot more of these days is proof-of-concept R&D projects that address high-risk concepts with very modest investment.

WJI: We see that the list of companies that IAP serves includes three cable manufacturers: Specialty Cable Corporation, The Okonite Co. and the Marmon Group. What services do you offer them?

Nahass: IAP helps solve problems and accelerate their R&D efforts. We identify production anomalies, customer complaints, vendor quality changes, and the like. We also work very closely with the Electrical Insulation Research Consortium (EIRC), which has facilities specific to their

UConn IAP customer

SPECIALTY CABLE CORPORATION

Specialty Cable Corporation (SCC) has been a member of the Industrial Affiliates Program at UConn's Institute of Materials Science for three years. Below Jim Streifel, vice president of sales, Specialty Cable Corporation, shares his thoughts on the program.

WJI: Has the program been a definite plus for your company?

Streifel: The UConn program is considered a tremendous success at SCC. It preforms tests that we cannot perform in our lab, mostly for analyzing new and currently used materials to determine if the chemical and physical compositions are suitable for our applications.



Jim Streifel

WJI: Do you have a sense of trust in this program, and how valuable do you see that as?

Streifel: UConn has provided quick turnaround times, and the results, without exception, have been reliable, helping guide SCC when addressing issues. Our UConn affiliation gives us access to a world-class testing facility, without all the expense of operating a lab independently. UConn has become a necessary and valued asset for SCC.

WJI: Can you provide an example of a single experience that reflects the value of the arrangement?

Streifel: We don't just do R&D for

a new cable and then see if it passes. We test at different stages to verify that we are still good. We recently sent UConn a sample for a new PTFE aerospace product that had to meet a stringent flame test. One critical requirement is knowing the degree of sinter. Now, we could test in-house for that, but not to the exacting degree that UConn can. For a reasonable price we get good confidence our product will pass, and if something is not right, they can provide us with valuable data to help determine our next move. That is real-world help because a lot of man hours, from marketing to R&D, go into each new cable.

needs, as well as utilizing our core chemical, polymer and mechanical analyses facilities. The EIRC, a consortium, operates within UConn's Institute of Materials Science, and all the work is done at UConn, most of it within IMS.

WJI: What happens when one of those companies (or any participating program company) contacts you with a request?

Nahass: They usually call me to describe the problem, and we propose an analytical suite of tests to address them. Typical requests are done in one to two weeks, with a report of the findings provided.

WJI: Please provide an example of what the process may be like for a participating company.

Nahass: One small company in the healthcare space trying to launch a new product has vendors providing a key component. They recently asked us to analyze the

performance of the vendors' products, and recommend potential changes to the formulation and the process to improve its longevity. We quickly characterized the chemical formulation and correlated it to the perfor-

mance tests the company performed. Based on that, we made recommendations for chemical changes and surface preparation to improve the longevity of the product. The jury is out on success of the product in the market.

WJI: What kind of equipment do you typically use to test samples from your cable clients?

Nahass: Typical requests for analysis of material degradation or contamination would utilize chemical analysis techniques such as infrared spectroscopy (FTIR) and gas chromatography/mass spectrometer (GC-MS); polymer thermal analysis, such as TGA, DSC, and DMA; or poly-



A UConn graduate student performs electron microscopy on an IAP member sample.

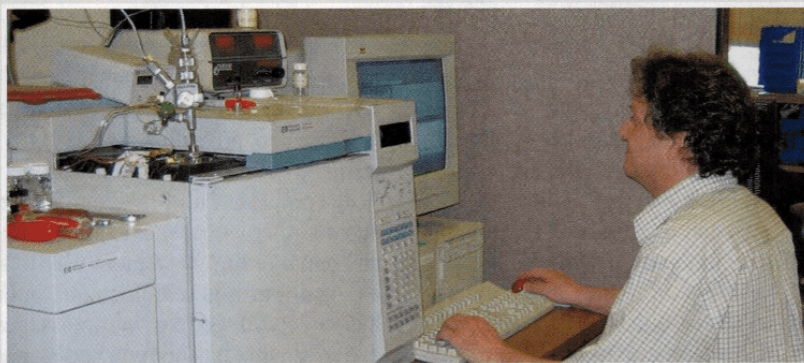
mer molecular weight determination using gel permeation chromatography (GPC).

WJI: Who does the actual work on your end? Do the students get to do meaningful work?

Nahass: IAP has six full-time, professional lab managers (four have PhDs) each with an average of 20 years of experience. They are experts in operating and maintaining our equipment, and interpreting the data generated. Additionally, graduate students design and execute real-life company projects and run analyses for requesters. In addition to providing real-world examples of what the equipment can do, this work establishes relationships between the companies, students, and faculty that lead to new hires and consulting partnerships.

WJI: Was there an interesting aspect not covered by the above questions?

Nahass: IAP provides different services for different types of companies. Large companies tend to come for highly-specific characterization problems, using some of the world-class facilities and faculty IMS has. Small companies often use IAP as an extension of their R&D staff and equipment. Medium-sized companies tend to have their own equipment for routine analysis, but need more specialized facilities occasionally, or come to us when their equipment fails or is occupied.



An IAP staffer performs chemical analysis on a contaminant sample.

For more information on the UConn Industrial Affiliates Program, go to www.ims.uconn.edu/industrial-affiliates-program/industry-affiliates