

Chemical engineers with many loves and a social conscience: Profile of a husband and wife team

"Many AIChE members have become accustomed to seeing Lisa Brannon-Peppas and Nicholas Peppas at AIChE's national meetings. A dynamic husband and wife team, both are directors of the Institute. They are also heavily involved in innovations in drug delivery, a field within the rapidly expanding discipline of biotechnology.

However, many readers are probably not familiar with some of their other interests. Nicholas came to New York for the new directors orientation during the last week of January. He continued his journey to Amityville, New York on Long Island.

The purpose of his extended trip had nothing to do with AIChE. Instead, he was on a hunt for 78s from 1905 and 1906-some might call these musical artifacts. "Do you even remember the 78?" he asked AIChExtra. A fair question in the age II of compact discs.

Lisa's interests are a little more on the wild side. When she's not working in the business jungle, she can be found in the company of Siberian tigers and snow leopards. She studies these endangered species in efforts to help avert their extinction in the wild.

Nicholas and Lisa-biotechnologists of artistic persuasion and social conscience-have a message for aspiring chemical engineers and other technical professionals. "Look at us and you will see that two ambitious professionals can have an active social life and many other interests," Nicholas told AIChExtra. "When I was growing up in Greece (Nicholas emigrated to the United States at the age of 22), a balanced education was stressed by my parents. You have to have that balance in your life."

Nicholas Peppas was one of the chemical engineers who helped redefine the field of pharmaceutical engineering. At the time he finished his postdoctoral work at Massachusetts Institute of Technology in 1976 with Clark Colton, a pioneer in kidney dialysis, there were not very many chemical engineers who were involved in the pharmaceuticals field. The chemical engineers working with pharmaceuticals were mainly working with chemical reactions and not actively creating new forms of drug delivery.

According to Nicholas, "at the time I was starting out, chemical engineers were able to enter the field and redefine it in the area of drug delivery systems-making the delivery of drugs more exact. No one knew anything about transdermal patches, or formulas that respond to changes of the glucose level in the bloodstream in the case of diabetes. These are innovations that we can build on for the future."

On Lisa's side, she knew in junior high school that she wanted to be a biomedical engineer. "That was quite an early age for her to know it," Nicholas said. As a junior at Rice University who was majoring in chemical engineering and knew that medical school "was not the right thing for me," she attended a lecture that the AIChE student chapter advisor gave on the release of insulin into the bloodstream for diabetic patients.

The experience was an epiphany for Lisa. "I said to myself 'that's it.' I had no hesitation."

Lisa continued, "It was chemical engineering on a molecular level. To use a chemical engineering metaphor the capillaries in the blood can be likened to the pipelines of oil, but of course the body is infinitely more complex. It was something that could be useful for so many people. For instance, so many people know a friend or a relative who has diabetes."

Her interest in exploring this metaphor to the fullest led Lisa to eventually form her own company, Biogel, in 1991. Currently, the focus of the company's research is the development of targeted drug delivery systems that can help doctors directly attack cancerous cells.

Lisa and Nicholas met when Lisa was enrolled in the PhD program at Purdue University, where Nicholas has been a professor in the university's chemical engineering department since 1976.

Both of them were extremely happy that life worked out so that they could be married to another chemical engineer. "I am certainly very very lucky to have met Lisa in that respect. When I go home, I am grateful to have someone I can share my work with," Nicholas told AIChExtra.

I always thought that the person I married would be smart, clever, and at the top of whatever they did, but I never assumed that they would be a chemical engineer. This has a lot of good points... we're able to talk about what we do. Science is certainly one of the big topics that comes up at the dinner table, laughs Lisa.

What other topics might come up if someone were to have dinner with the Peppases? Perhaps the beginnings of an answer to that can be found on Nicholas Peppas' profile on the Purdue University Web site, which speaks of his passionate interest in opera and in Byzantine history. Peppas studied Byzantine Music under Vasilis Mavraganis in the Greek Conservatory of Music from 1964 to 1967 and is listed in the 1993 Who's Who in Music.

Nicholas speaks passionately about opera, clearly pointing out the importance it has in his life. "Opera will always be the big love of my life," Nicholas said. Lisa quickly confirmed: "He'll drop any chemical engineering project for opera."

Nicholas continued, "Music and history are my first love. While I am mainly drawn to 18th and 19th Century Italian opera, I also follow the way that

modern music is evolving. We can always draw comparisons between the music of the past and today's music."

Nicholas offers an example. "From 1880 to 1910 the Italian opera entered a period where it dealt with the everyday problems of the people and departed from the traditional myths and fantastic stories--the word in Italian for this new type of opera is verismo. Artists like Puccini began focusing on the common activities of the people. Now, in today's music, rap and hip-hop play a similar role. They talk about the everyday life of a certain group of people within society."

Pondering this statement, Nicholas asks, "In the 22nd Century could rap be the tragic music that opera is today? I don't know, but I think the potential is there."

Lisa's own major interest in wildlife conservation has also no doubt spurred on many conversations and, according to Nicholas, "has changed the way that I think of doing research." Presently, Lisa does work for a zoo in Indianapolis, where her focus is on studying the behavior of Siberian tigers, snow leopards, and other "large cats," as Lisa puts it. Her work includes training and observation that will help wildlife preservationists safeguard these species from extinction.

This experience has also changed the way that she has done her work in the lab. "I truly do wish that we could perform experiments without harm coming to any animal. My interest in wildlife has led me to make sure that every life we sacrifice in a study will have significant meaning. We do all of the preliminary testing possible to avoid hurting animals later on."

Nicholas' tremendous pride in Lisa and her work was shown by the effect that she has had on his own activities in the lab. "I have tried to eliminate any unnecessary use of animal testing. In my work on diabetes and multiple sclerosis, often we can do studies using individual cells, rather than an animal. I think it was Lisa who got me to think about these things."

Ultimately, it is the positive impact they have 'h on:

each other's personal and professional lives--and their pride in each other--that stands out about Nicholas and Lisa.

"You know, I really admire everything she does," Nicholas told AIChExtra. "Sometimes, I go to meetings with her at professional organizations where she is the big shot, and I am the one who is 'tagging along.' This gives me a great sense of pride in what she has accomplished."

Lisa agreed. "If either one of us succeeds, then both of us succeed. There couldn't be a more supportive situation than that."

Ed. Note--This is part of an occasional series of articles profiling members of AIChE. The purpose of the series is to showcase the diversity in people and accomplishments represented by members of the Institute. To suggest a member for inclusion, please contact Scott Hamilton, AICM Manager of Communications, at 212/591-7660; e-mail communications@aiche.org .

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