

Wellesley College

By Mindy Levine

On a typical summer morning in 2010, two undergraduate students are working in Professor Wilton Virgo's laboratory. Sarah Hyde, a senior chemistry major, at Wellesley College really wanted to "play with lasers," which is how she decided to study chemical dynamics using experimental laser techniques in the Virgo group. Nicole Spiegelman, a sophomore student, enjoyed taking a chemistry course with Professor Julia Miwa of Wellesley College and was inspired to do research because of the Introduction to Chemistry course that she took with Professor Virgo. They, together with 23 other chemistry majors, conduct cutting-edge chemistry research under the supervision of faculty supervisors.

The level of research performed by undergraduate students at Wellesley is remarkably advanced, according to Professor Virgo, as they conduct research that would typically be performed by graduate students at Ph.D. granting institutions. This opportunity for undergraduates is one key factor that distinguishes primarily undergraduate institutions (PUIs) from other research universities.

Faculty members at PUIs generally also have a higher teaching load than their colleagues at research universities, although Professor Virgo currently teaches only one course in the fall (Introductory Chemistry) and one in the spring (Physical Chemistry II).

Wellesley chemistry students have the opportunity not only to do research, but to become involved in a variety of chemistry-related activities. They attend weekly seminars during the academic year, as well as during the summer, and they can interact with the visiting speakers. The department also promotes travel to regional and national ACS meetings, and departmental poster sessions "get us prepared for that kind of environment," according to Ms. Hyde. The students who conduct research can write senior theses based on their work, and are then eligible for departmental honors. For example, Madeline Elkins, an alumna of the Virgo group, received the Eleanor Webster prize in chemistry for her honors thesis. Ms. Elkins is currently a doctoral student at the University of California Berkeley, where she works for Professor Daniel Neumark.

As an all-women's college, Wellesley is in a unique position to encourage women to pursue scientific careers. In fact, the homepage for the Wellesley College Science Center says, "Preparing Women for Leadership in the Sciences," claiming that "support for the Sciences and science majors at Wellesley is unsurpassed."

Faculty members at Wellesley College are highly active in competing for grants and fellowships. There are several fellowships that are designed specifically for researchers at PUIs, such as the Research Corporation for Science Advancement's Cottrell College Science Award, that was recently awarded to Professor Virgo. Researchers are also eligible for standard chemistry awards such as the NSF CAREER award. The ACS Petroleum Research Fund (PRF) has specific grants that are designated for faculty from PUIs and research universities.

Researchers at Wellesley College are encouraged to initiate collaborations, with colleagues in other departments and those at other institutions. Within Wellesley College, the chemistry department is housed in an interdisciplinary science center with seven other scientific disciplines. This encourages collaborations, as researchers can simply

“walk down the hall and toss around ideas with colleagues from another department,” explained Professor Virgo.

Collaborations with other institutions can also be highly productive. For example, Professor Virgo maintains close ties with his post-doctoral supervisor, Professor Robert Field. Professor Virgo continues to conduct research at MIT, which has departmental resources that are not available to the smaller department at Wellesley College. This past summer, he brought Ms. Hyde and Ms. Spiegelman to collaborate with and conduct research in the Field Group at MIT.

The particular research conducted in the Virgo group involves using “sophisticated laser techniques to understand photochemistry related to the atmosphere and the environment,” said Professor Virgo. To date, Professor Virgo has mentored ten students in his laboratory. The students learn that there is a connection between fundamental ideas that they learn in the classroom and sophisticated experimental techniques for solving realworld problems.

Professor Virgo said, “My goal is to get students involved in research that is going to be advantageous for whatever professional career they may pursue.” Many students continue to medical school or other professional schools after they graduate from Wellesley, and several decide to pursue graduate degrees in chemistry.

Professor Virgo’s current students, Ms. Hyde and Ms. Spiegelman, were asked about their career plans. Five years from now, Ms. Spiegelman would like to be “working in a nonprofit organization,” although she has not ruled out the possibility of continuing her scientific research. Ms. Hyde, on the other hand, “wants to keep doing chemistry research,” although she has not decided what sub-discipline most interests her.

In summary, Wellesley College provides a highly supportive environment, according to Professor Virgo. “We are encouraged to be great teachers and great researchers.” Professor Virgo said, “It’s a lot of fun.”