During the fall co-op term, I worked closely with one of the project team and the Technical Working Group in the Chemical Process Development and Commercialization department. The mission of this department is to focus on the process development, bulk drug supply and technology transfer of new active pharmaceutical ingredients (APIs) for both clinical development and market launch. Several project teams exist within the department, and each project team generally works on one or more APIs, with support from the specialty labs (reaction chemistry, crystallization, and etc.) and technical working groups. The project that I worked on was to control and potentially prevent granulation during the API drying process. Granulation is the process when small particles gather together and grow into larger masses. Formal safety training was provided in the form of interactive hands-on and online reading and checklist. My supervisor and other co-workers also provided detailed instructions and precautions to the various equipment and chemicals. I usually directed my questions to my supervisor who was very accessible and approachable. Additionally, other co-workers were extremely kind and willing to provide helps as needed.

As part of the project, I was exposed to numerous advanced laboratory equipment and the general operation in the pilot plant. I personally found my project to be quite challenging. Courses that may be beneficial to this project were fluid mechanics, heat and mass transfer, physical chemistry, general physics and statistics. Although the
knowledge in these courses might not be directly applied, it is crucial to develop the critical thinking skill. Besides technical background, communication was quite important for the daily work, as the projects often involved many people from different groups. In terms of personal development, I was given ample opportunities to communicate with other professionals. At the same time, with the help from my supervisor, I was also able to increase my ownership in the project by initiating collaboration with the formulation group in West Point, PA.

The site is located at Rahway, New Jersey, which is about half an hour to Manhattan either by train or car. Merck also provides shuttle buses for the employees who take the train to work. The working schedule is extremely flexible. Throughout the fall, there are several social events for the employees in this department, and I was able to socialize with people with different backgrounds. Gym facilities and certain types of sports teams are also available for those who are interested.

Overall, I feel that the co-op position at Merck was an exciting and rewarding experience. My supervisor gave me more responsibility as I obtained more knowledge through my project. I also found myself surrounded by a group of truly intelligent and friendly professionals, and I would recommend the future co-op to work at this place.
Shi Hang Chen
Net ID: shc34
Major: Chemical and Biomolecular Engineering
Employer: Merck & Co., Inc.
Term: Summer 2009

This was my second co-op term at Merck & Co., Inc., and the location was West Point, PA. I was working in the Vaccine and Biologic Process Development department. The function of this department is to develop and scale up processes for the production of various vaccines and biologics. In terms of my project, I was studying the impacts of different parameters on the filtration performance for the manufacturing process of a particular vaccine. I had spent most of my time, approximately 70%, in the lab carrying out experiment. At the beginning, I was working with a mentor in the lab to learn all the necessary laboratory skills. After this initial stage, I was gradually given more responsibility and gaining more independence and ownership in my project. From the technical standpoint, the opportunities available in this department can definitely help the future co-op students develop and improve their problem solving and critical thinking skills in an industrial setting as well as gaining experience in experimental design and planning.

In terms of life outside of work, Merck & Co., Inc. really put a tremendous amount of effort in improving the co-op and internship experience. Housing was provided in the summer, and it was right next to the University of Pennsylvania campus, which is in the center city of Philadelphia. Living in this area, one can certainly find all types of activities after work and on the weekend.

Overall, I would definitely recommend future co-op students to consider applying for the co-op position at Merck & Co., Inc., as it will certainly be an invaluable opportunity for one's professional and career development.
Kelly Pollock  
Chemical Engineering  
Merck  
Fall 2008  

I worked in the Biopurification Development department at Merck for my Fall 2008 co-op term. My group was working on developing the process to produce a vaccine. My project was to focus on one step of the vaccine production and determine which factors, such as temperature, pH, and concentration, would have the greatest impact on the product and therefore need to be carefully controlled during manufacturing. I also studied the kinetics of this step of the process.

I received training and guidance from many sources during my co-op assignment. When I first started at Merck, I completed many online safety trainings that are required for all new hires. When I began working in the lab, the other members of my group taught me about the process and how to use the equipment. I was also given some paper to read for background information. Merck also offers classes in subjects such as statistics which helped me learn to organize my experiments and determine which results were significant. Once I started my project, there were always people around to answer my questions and offer guidance.

One of the aspects that I really liked about this job is that I was able to design, execute, and analyze my own experiments. I could see how the results of my experiments would be useful for the overall development of the vaccine.

Merck does not provide housing for co-op students in the fall. Short-term leases are difficult to find so I ended up renting a room from someone on Craigslist. Although it was strange to live with someone I did not know, it has worked out fine. I would definitely recommend a car for anyone working here, but Merck does provide a shuttle to the site from the nearest train station. From West Point/Lansdale, it is easy to get to
Kelly Pollock  
Chemical Engineering  
Merck  
Fall 2008  

Philadelphia or New York City and I would recommend visiting these places on the weekends. There were not many other co-ops here this term so I ended up visiting co-op students in nearby cities or going back to Cornell most weekends.
Job Summary

I worked in the Chemical Process Development and Commercialization department during my second co-op term at Merck. CPDC is part of the Merck Manufacturing Division. My project focused on measuring the energy required to break particles with sonication. I learned how to use sonication equipment, different types of calorimeters, and particle size measurement instruments for my project. I was trained on this equipment by my supervisor or other people in the department. My supervisor was available whenever I had questions or needed guidance on my project.

During the summer term, Merck and CPDC organize many events to familiarize the students with the company. In the fall, I did not learn much about what was happening outside of my department. This summer, I learned about many of the departments that a chemical engineer may work in and also got to go on tours of the pilot plants.

Merck provided housing for the interns and co-ops (only in the summer). We lived at Rutgers University. This was great because I didn't have to worry about finding housing and because I was living with all of the other interns. Living in New Brunswick was nice -- since it's a college town, there was more to do than in many other cities. Merck also provided us with train passes so it would have been easy to get by without a car. Another advantage of the summer term is the intern activities. We went on a cruise in Philadelphia and to a baseball game.
This job has really given me a better understanding of what types of jobs are available in the pharmaceutical industry. I also gained a lot of experience with working in a lab and trying to solve problems that may not be straightforward. Overall, I really enjoyed my co-op term at Merck.