



PSU student conducts research for more efficient power sources



As electric car sales around the world soar, researchers continue to search for ways to improve electric vehicles and their power sources.

That is exactly what Wang Lin, of China, is doing at the Kansas Polymer Research Center (KPRC).

“The production and storage of green energy is the subject of my current research,” Lin said.

Lin, a Pitt State graduate student in Materials Science, says that the main disadvantage of current

electric vehicles is the use of lithium-ion batteries as a power source, as they have a slow charging speed and short cruising range. To solve some of these shortcomings, Lin is researching supercapacitors which are a type of battery known for their high charging and discharging efficiency. The use of supercapacitors can be used as power sources for various electronic products used in daily life, such as for charging cell phones.

“(Using supercapacitors) ... means that electric vehicles that use them as a power source can be charged in just a few minutes,” Lin said. “This also means that the utilization rate of charging piles will be greatly improved, and electric vehicles can be selected as vehicles for long-distance travel because recharging will be as convenient and efficient as refueling.”

Lin said that students at Pitt State and in the Materials Science program, which is conferred through the Department of Physics, provide graduate students with many research opportunities.

“Students majoring in chemistry, polymer chemistry, and materials science have a great opportunity to become a graduate research assistant in KPRC as long as you study hard and have a strong research interest in topics related to your major,” he said.

Having opportunities to conduct research is important for students, Lin believes.

“Research work can help us accumulate work experience, and more importantly, lab work can be published,” he said. “This is also the reason why many students, including me, are encouraged to work hard.”

One aspect of the research opportunities at Pitt State that stands out to Lin is the freedom to pursue research topics that students are personally interested in.

“Being able to carry out research projects that I am interested in, and being able to lead research projects by myself is what makes me feel the most fulfilling in my work at KPRC,” Lin said. “Dr. Gupta, as my mentor, provided me with many research topics. He encourages students to do research they are



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interested in instead of telling students what they should do. Students only need to tell Dr. Gupta about the research fields they are interested in, and he will help them to carry out student-led research work, which is also an important reason for his popularity among students.”

According to Lin, his favorite part about Pitt State is the “environment created through collaboration with fellow students,” not only in the lab, but around campus as well.

“At any time, I can receive the most enthusiastic help,” he said. “It is worth mentioning that due to some health reasons when I first arrived in the United States, I missed many opportunities to participate in group activities and make new friends. However, at the Bryant Student Health Center I visited frequently, I made many good friends with the staff, and they are still a very important part of my life at PSU.”

Lin said he is grateful for all the opportunities he has at Pitt State and through the KPRC.

“Currently, I have a full-time graduate assistant position, which solved my financial pressure issues during the study process,” he said. “More importantly, the research projects in the laboratory allow me to have new expectations for my future life and accumulate a wealth of work experience. For example, during the summer, I mentored some high school students and some students from other universities who came to KPRC for internships to conduct some research projects.”