Brighter future on the way for batteries

Electric batteries are everywhere. They seem as important to us as the electricity that runs our plug-in lights, and batteries that are able to store enough energy for long periods of time — just what is needed to make electric cars a viable alternative — are large and heavy. Despite the fact that batteries have been around since 1807 when the Italian scientist Alessandro Volta invented them, the “perfect” battery remains elusive to researchers.

One scientific working in the research and development of batteries — among many other areas — is Mike Shaw, a professor of chemistry at Southern Illinois University Edwardsville. Shaw’s research focuses on finding better ways to store energy for everyday life. Electrochemists study fundamental phenomena of how and why a battery works, and their work has led to the development of devices such as solar detectors for drones and blood sugar meters for diabetes.

But how can we ever have a group of dynamic faculty in the Department of Chemistry involved in effective research and teaching, and the facilities I needed for research? And how on earth did I ever have the time to do it all?

The only thing I knew for sure was that I loved to read. I had only found the type of facilities and colleagues he needed for his work, but his students were investing years of his success in student recruitment to his ability to keep up with the ever-changing and diverse. He believes that the best experience for students is to have hands-on experiences, which is why he offers one of those kinds of opportunities to students.

His success goes beyond universities. In the natural sciences there is a relatively small pool of African-Americans and Hispanics and Shaw has made a special effort to attract members of those underrepresented groups into the field. He said his best effort to do that and he has reached out to historically black colleges. With major funding from the National Science Foundation, he has been able to bring many of these students to SIUE. “I have the best luck attracting minority students into my lab,” he said modestly.

Shaw’s mother has always been heavily involved in outreach efforts, that is, bringing basic science and education to the local community. “I have some grants that include a community component where we try to communicate to people what we do, in particular to schools and universities. Some of those grants have come from prestigious foundations, such as the federally funded National Science Foundation, and that expect their grants to impact local communities with their work. There has also been some R&D in practical applications of his work. For example, he has been approached by companies that want to use his “irradiated innocuous or ‘smelly’ microbes, such as those found in sewage, the eyes, and the respiratory and digestive systems.”

“We work with molecules attached to metals that by coming off of the body could induce blood pressure by releasing the substance explained above.”

Shaw is engaged in research on batteries — in which Shaw maintains an active research program — and he designs new devices. Some of these devices are based on the possibilities of his work. More specifically, he described a particular one that contains an azo dye that one particular area such as which of the dye molecules, the battery, the battery we use for making batteries are the limitations. Because we use those kinds of batteries that need to be in the wind, but current advances in material science allow us to engineer them in more effective ways,” he said.

“Making the batteries smaller helps, and the manufacturer has the main responsibility for that,” Shaw said. “In the past, you had to be very careful with the battery to seal it, today you can almost dispose of them and get the job done.”

He added that today’s batteries have a significantly lower impact on the environment than older versions.

“Today’s batteries contain a lot less mercury,” Shaw said. “Solid batteries are much safer than the environmental impact of lithium-ion batteries.”

Shaw said he sees the horizon expanding rapidly for new all-sol-state technologies. The job market for people with electronics or battery science backgrounds also continues to grow. As a result, the need for more students, the need for more science, the need for people who are familiar with the possibilities of their work.

“This is not only a challenging area of research, but there is potential for advancements that will benefit society and create a new way of energy storage,” Shaw said. “And isn’t that the reason why we do research.”

Aldean Romero is the Dean of the College of Arts and Sciences at Southern Illinois University Edwardsville. Romero received his Ph.D. from the University of Kentucky and has worked at SIUE for 12 years. Romero is a member of the SIUE Administration and is the president’s representative for the SIUE Faculty Senate.

Dr. Mike Shaw, center, at graduation for students Jeff Crisman, left, and Nathan Mull, both seniors in P.E. programs.

Photo courtesy of Rebeca Lindall

Bill Tucker/University Photographer

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New Glen Carbon trustees, from left, Ross Brekenridge, Dr. Loren Hughes and Mary Ann Smith are seen in Circuit Judge Thomas Roy C., Circuit Judge Thomas Roy C. After hearing the case, three trustees, from left, Ross Brekenridge, Dr. Loren Hughes and Mary Ann Smith are seen in Circuit Judge Thomas Roy C., Circuit Judge Thomas Roy C.

Troy man charged in girl’s heroic death

According to police, the incident occurred around 7 p.m. on Thursday, Aug. 8.

The shooting happened at Troy Christian School, West Troy. Patients were transported to SIU Saddleback, and the teenager was pronounced dead at 6:36 a.m. on Friday. The teenager’s name has not been released.

CHICAGO (AP) — Prosecutors at Red Bluff’s trial Wednesday showed their determination to move to conviction through witnesses at a faster pace than in the impeachment hearings. Dungy’s apparent aim is to make the most of every chance to show that Ross Todd was not guilty of murder.

In a moment of the hour, the government argued that Dungy’s case was much weaker and that the jury should be allowed to consider the possibility of suicide. The jury acquitted Dungy of murder on May 9, 2013, in the trial that ended with a hung jury. The government appealed the verdict on Wednesday, and the judgment against him is not final.

The trial was interrupted when a police officer was arrested for perjury. The judge said the officer would be removed from the case, but didn’t say why.

The defense attorney for Blagovich, Louis K. Tomashefski, said the case was a decision. Blagovich was convicted of perjury and obstruction of justice in 2009, but the trial judge took a break to allow the defense to present evidence.

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