

# THE *Current*

February 2, 2026

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## **UCSB Chemistry Nobel Laureate Alan Heeger celebrates his 90th birthday with a symposium in his honor**

One of the perks of being a Nobel laureate is that if you're lucky, in time you will get to witness just how far the massive impact of your work goes. Such was the case for [Alan Heeger](#), professor of materials and of physics at UC Santa Barbara. Recipient of the 2000 Nobel Prize in Chemistry "for the discovery and development of conductive polymers," Heeger celebrated his 90<sup>th</sup> birthday with — what else — a research symposium in his honor. Colleagues, friends and family gathered on campus to reminisce about their experiences working with him and his ideas, while presenting work on the state-of-the-art of the field he helped establish.

Held on the second day of the annual Materials Research Outreach Program conference, the symposium's many presenters featured distinguished scientists from around the world — including his sons, NYU neuroscientist David Heeger and Cedars-Sinai physician-scientist Peter Heeger.

"You didn't just challenge the status quo, you rewrote the rules," said Shelly Gable, UCSB's dean of mathematical, life and physical sciences, in her opening remarks. "In doing so, you launched the entire field of organic electronics."

Born in 1936 in Sioux City, Iowa, Heeger learned at an early age the importance of pursuing an advanced education. He and his brother were the first in their family to

attend university, and he went on to earn his bachelors' degree in physics and mathematics in 1957 from the University of

Nebraska, followed by a Ph.D. in physics from UC Berkeley in 1961. Heeger spent the next 20 years as a faculty member of the University of Pennsylvania.

At UCSB, where Heeger moved in 1982, he and fellow materials scientist Fred Wudl established the Institute for Polymers and Organic Solids (IPOS). Their vision was that IPOS (now the Center for Polymers and Organic Solids, or CPOS) would serve as a hub for education and international research exchange. CPOS is an interdisciplinary center that merges efforts in physics, chemistry, polymer science, materials and biology. Over the years, the center has become an international focal point for research with visitors from all over the world.

By this time Heeger, with colleagues Alan McDiarmid and Hideki Shirakawa, had rocked the world of materials with the accomplishment of something widely thought to be impossible: creating a polymeric material — a plastic — capable of conducting electricity. Prior to [their 1977 paper](#), we lived in a world where polymers — large molecules comprising smaller units known as monomers — were, as a rule, nonconducting.

However, by modifying the bonds between elements in these polymeric chains (in this case polyacetylene), and strategically doping them to add or subtract electrons, the researchers found that they could generate the charge carriers essential for high electrical conductivity. Their work would open the door to widespread innovation and industry, from OLED displays to photovoltaics, biosensors to flexible and wearable electronics and more. Along the way, UCSB would become one of the world's foremost institutions for materials sciences and Heeger, McDiarmid and Shirakawa would go on to win the 2000 Nobel Prize in Chemistry.

Fast-forward to today, and Heeger's legacy of innovation and interdisciplinary collaboration continues to shape research not just at the UCSB campus, but all over the world, as collaborators and colleagues demonstrated with lectures on the myriad applications and rich research questions spawned by Heeger's work.

At 90 years old, Heeger continues to be a fixture on the UCSB campus, inspiring future scientists.

“It was an incredible privilege for me to help organize this event,” said Thuc-Quyen

Nguyen, a distinguished professor in the Department of Chemistry and Biochemistry and director of CPOS. “The Heeger symposium highlighted Alan’s legacy and global impact as well as the vibrant future it continues to shape.

“It was wonderful to see many IPOS/CPOS alumni joining the symposium and sharing how the training at UCSB has impacted their career,” she continued. “Alan is an inspiration, and we learned so much from him — choosing impactful scientific problems to solve, striving for novelty and innovation, thinking outside the box, asking the right question, doing the experiment right, science communication, writing proposals and most importantly, not losing our nerve when we face a challenge. Many things Alan taught us are being passed on to our students. The celebration was a joyful and emotional event for many of us.”

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The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.