J. David Cohen

November 27, 1946 - October 29, 2012

Last place of employment:

University of Oregon Eugene, OR, US

J. David Cohen, Professor of Physics at the University of Oregon died on October 29th 2012 after a long illness. He is survived by his wife and companion of many years, Carol Cohen.

After serving in the U.S. Army, Dave obtained his Ph.D. in physics at Princeton University under Prof. T.R. Carver in 1976, working on microwave properties of ferromagnets. He then took a post-doctoral position at the University of Illinois with Charles Slichter, who describes him as "a magnificent human being." In his research there, Cohen developed the theory of nuclear magnetic resonance as a method to study the famous Kondo effect and successfully explained a substantial amount of NMR data obtained over a span of several years by the graduate students in the group.

Dave then joined Bell Labs in 1978 and began the work that defined the remainder of his career – characterization of defects in semiconductors, especially as it relates to the performance of solar cells. Together with David Lang, Dave pioneered the application of the Deep Level Transient Spectroscopy (DLTS) technique to amorphous semiconductors. His paper on the dynamic response of Schottky barriers with a continuous distribution of gap states made it possible for the first time to accurately extract the density of gap states from DLTS scans of amorphous semiconductors. Dave's work revolutionized the understanding of hydrogenated amorphous silicon, updating the density of states obtained by field-effect measurements that had previously dominated the field. During his time at Bell Labs he published more than 14 papers on the subject of defect states in amorphous Si and their characterization by capacitance, admittance, DLTS and other methods.

In 1981 Dave joined the Physics Department at the University of Oregon, where he spent the rest of his career. He developed several measurement techniques that are now widely relied upon for characterization of solar cells in research laboratories around the world, most notably drive level capacitance profiling and transient photocapacitance. These are generally acknowledged to be more reliable for solar cells than their more common cousin, capacitance voltage measurement. In addition Dave was a major contributor to the application of the admittance spectroscopy technique to solar cells and as the world's foremost expert on the application of these techniques to solar cells he frequently gave invited talks at international conferences on the subject. His work certainly represents one of the cornerstones of our understanding of defect states in amorphous silicon solar cells and his more recent contributions in the area of chalcogenide solar cell materials are among the most important works to date as foundations for improving the performance of these devices.
Of his recent work in chalcopyrites one of the leaders in the field, Malgorzata Igelson, writes "I met Dave first time at one of the PV conferences about 15 years ago when he took interest in CIGS solar cells and ever since I looked forward to discussing with him recent results and ideas. Most of the time we had different opinions but that made our debate more interesting and inspirational. When I was planning to go to a conference, meeting Dave and talking to him was one of the highlights of the event for me. He brought valuable new insights and ideas to the community of researchers working on CIGS solar cells technology and characterization."

Dave was a dedicated adviser and mentor to his students who went out of his way to promote their career development. He continued to keep in touch with them and was actively collaborating with those still working in his area.

He was an extremely clever and creative experimentalist. His lab was stocked with component-type instruments, which he challenged his students to reconfigure to carry out new techniques he had invented. This building-block approach gave students a deep understanding of the techniques and a wonderful sense that, with a little imagination, all sorts of interesting things are possible in a lab. His students have taken this approach in their careers leading to novel and challenging instructional laboratories developed at different institutions by those of his students who have gone on to academic careers.

David Cohen loved the outdoors, folk music and dancing, which contributed to his choice to settle in Eugene Oregon. He spent many days walking in the mountains surrounding Eugene or visiting the Pacific coast. He enjoyed good food and the company of friends. Even though very weak, he attended - as always - The Oregon Country Fair a few months before he died, wearing his signature propeller beanie. Those who knew him remember him as a humanitarian with great personal charm who cared deeply about others.

Submitted by:

Angus Rockett

Obituary of J. Cohen (1946-2012) | Physics Today


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