

Scott Chubb: A Bright Light Has Gone Out

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The Naval Research Laboratory (NRL) has a remarkable number of remarkable people. But even the best of scientists are distributed in their characteristics and impacts. Scott Chubb stood out immediately after his arrival at the Lab as an NRC postdoc, and for long after that. As the leader of the Condensed Matter and Radiation Sciences division at the time, I did not interact extensively with all postdocs. But, before long, Scott and I were talking details about the surface science computations he was doing at the time. His knowledge and infectious enthusiasm made it fun to talk about science and other things with him. We never published together, but for the past 22 years we have worked in the same field. These reminiscences are not a thorough account of Scott's life, but rather a tribute to a fellow who was remarkably good both professionally and personally. He lost a two-year battle with cancer on 25 March 2011 after extensive chemotherapy, then many radiation treatments, and finally surgery for over 10 hours.



Scott Chubb in 2008
(by Charles Beaudette)

Scott received his undergraduate degree from Princeton University in 1975. He worked at the Brookhaven National Laboratory during his PhD studies in physics at the SUNY Stony Brook until 1982. He became a very well-trained theoretical and computational physicist. After his PhD, he received multiple offers of positions. He first went to Northwestern University as a postdoc, and then joined the NRL in a similar status. Scott was a member of Barry Klein's Condensed Matter Theory Branch. Later, much to my surprise, he took a position in the Remote Sensing Division. Intellectually, his work there was a big change from his earlier concentration on solid state physics. It mainly involved computational studies of data on ocean waves taken from satellites. In particular, he was involved in measuring currents at the edge of the Gulf Stream in the western Atlantic. Scott also wrote a paper on the small effects of relativity on the accuracy of the Global Positioning System. He obtained a patent on a device to correct for relativistic errors on GPS positions. Scott spent a sabbatical year at the National Institutes of Standards and Technology in Gaithersburg MD. While at NIST, he studied an atomic phenomenon, which is called the Bose Einstein Condensate or BEC. He and his colleagues were interested in the possibility that BEC could be the basis of gravimeters for submarine navigation and other uses. So, by that point in his career, Scott had worked on topics ranging in size from the atomic to the global levels.

To understand much of Scott's career, it is necessary to pause to note an odd chapter in the history of science. In 1989, two electrochemists, Martin Fleischmann and Stanley Pons, announced at a press conference that they found a way to produce energy, apparently from nuclear reactions, in small experiments at ordinary temperatures. The topic was initially and poorly termed "cold fusion." It is now usually called Low Energy Nuclear Reactions (LENR).

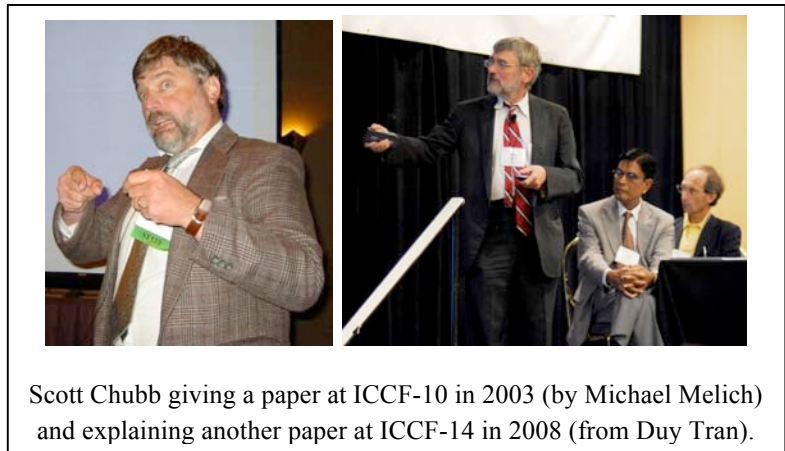
The announcement of "cold fusion" sent a shock wave through much of the scientific community. Seven weeks after the press conference, the same-day cover stories of *Time*, *Newsweek* and *Business Week* all featured Fleischmann and Pons, and what they claimed. The ability to induce nuclear reactions at temperatures about a million times below what was then thought to be necessary would be historic. Because of the odd way of making a scientific announcement, and because of other problems in the field, the subject got a very poor reputation. LENR has yet to gain legitimacy as a recognized scientific topic. Nonetheless, a great amount of experimental data now testifies to its reality. Right after the 1989 announcement, roughly three dozen people at the Lab quickly began to consider the topic. Scott Chubb and I were among them. That is how we came to work in the same field.

In 1990, Scott began to publish papers with his uncle, Talbot Chubb, who was also trained as a physicist. Talbot joined the Optics Division of the NRL about 1955, and then he became part of the Space Science Division when NASA was formed. Talbot later served as head of the Upper Air Physics branch, the largest branch at the NRL. That group had about five dozen people. They studied the sun, and had sections working on infrared, x-ray and gamma ray astrophysics. Sounding rockets were one of their primary tools. Talbot retired from the Lab, but remained an active scientist and technologist. He worked on a project called SolChem, a means to store solar energy during the day as the heat of fusion of materials for its extraction during the night. With this background in energy R&D, it was not surprising that Talbot became involved in "cold fusion" early and heavily. Scott and Talbot devised and elaborated a theory for the occurrence of LENR based on what they termed "ion band states." Essentially, such states are analogous to the vastly more familiar electron band states in solids. Their theory remains controversial and inadequately tested against experimental data.



Scott had a wonderful combination of deep knowledge of physics and a very quick mind. He rarely hesitated to put forward his views during ordinary discussions, at seminars or in scientific conferences. He spoke with such enthusiasm that I thought more than once that it would be good if he had come equipped with a volume control. Certainly, he was worth listening to, but he could have won awards for the most acoustic energy spent on a topic. That was the case no matter whether he was lecturing or asking questions of other speakers. I would chide him for his excesses, and wound up as his mentor and professional friend.

Scott's native enthusiasm made him a very engaging lecturer, as evidenced by the next photographs. His consistent creativity, intellectual brilliance, extensive knowledge, diverse capabilities, engaging character and marvelous smile led to him being one of the main theoreticians in the study of LENR for over 20 years.



Scott and I attended many of the International Conferences on Cold Fusion (ICCF) around the world. He was as interactive with individuals and in small groups as he was with the full conference sessions. The montage has photos I took of him at those conferences.



There has been and remains a major need for people studying LENR to reach out to other scientists. Scott made significant impacts on communications about LENR, in addition to his technical contributions to the field. One of his efforts was quite unusual. Every couple of years, Scott arranged a lunch with Professor Robert L. Park of the University of Maryland and, formerly, the American Physical Society. Bob was a member of my PhD committee. He later became a long-time and harsh critic of “cold fusion.” Bob wrote a book titled *Voodoo Science*, which includes a chapter on “cold fusion.” Some workers in the field despise



Scott Chubb in 2008 with Bob Park (center) and this author (left).

what Bob has written about it. But, thanks to Scott, we had some interesting discussions about physics and how science is done currently. We agreed to disagree about LENR. This image shows the three of us at The George Washington University before one of the lunches.

The American Physical Society (APS) has not accepted LENR as a legitimate field of scientific inquiry. But, that did not stop Scott from arranging sessions on “cold fusion” at a dozen March meetings of the Society, which focused on Condensed Matter Physics. He exploited the APS rule that any member can present a ten-minute paper on almost any scientific topic. The sessions did not change the overall disrespect for LENR, but they did permit interested members of the APS to listen to scientific papers on the subject. Ironically, Scott died on the same day as the last of the APS sessions he organized was scheduled.

Scott was also responsible for getting the editor of a little-known but entirely appropriate journal to devote an entire issue to “cold fusion.” He got seven authors to agree to contribute to that issue. The *Journal of Accountability in Research* published Scott’s introduction and our papers in 2000. Scott’s motivation for suggesting and managing that project was his feeling that this particularly contentious field, both internally and externally, needed some ethical considerations. That was another reflection of his broad creativity, not only technically, but also in the more social aspects of science.

Scientists have only two fundamental functions. The first is to learn new things. And, the second is to communicate them. Without learning there is no science. Without communications, what is the use of learning? Scott was certainly active in both of these basic aspects of science.

Many of us have absorbed considerable criticism from colleagues for working on LENR. In 1989, I received a memo from a member of the division asserting that my career was ruined because of my interest in the topic. That year, a wake for “cold fusion” was held 50 feet down a

hallway from my office, with the punch bowl configured like an electrochemical cell. Scott also paid some price for working on LENR while still at the NRL. He was restricted from studying the topic and publishing in the area as part of his NRL duties.

After his retirement from the Lab, Scott affiliated with the *Infinite Energy* magazine of the New Energy Foundation as Technical Editor. He wrote many editorials and articles for the magazine, as well as conference reports and book reviews. And, he continued to publish scientific papers in the proceedings of the ICCF. Scott was one of the two theory editors for the 800 page proceedings of the 14th ICCF, which I chaired on Capitol Hill in 2008. Those proceedings are at <http://www.iscmns.org/iccf14/ProcICCF14a.pdf> and <http://www.iscmns.org/iccf14/ProcICCF14b.pdf>.

Scott could not travel to ICCF-16 in Chennai, India in February of this year. His paper was given by Michael Melich, co-chair of ICCF-14. Mike joined NRL in 1976 as a member of the Communication Sciences Division, which morphed into the Information Technology Division. He became a Professor at the Naval Postgraduate School in 1985. Issue 95 of *Infinite Energy*, published earlier this year, contains the ICCF-16 article entitled “Magnetic Field Triggering of Excess Power in Deuterated Palladium” by Scott and Dennis G. Letts. It reported Letts’ experimental results on increases in excess power due to application of DC magnetic fields with a particular orientation. In the paper, Scott provided a quantitative relationship between the size of the nuclear active region and the gestation time needed for production of power from nuclear reactions. His last paper was entitled “Conventional Physics Can Explain Cold Fusion Excess Heat.” That paper was given in the middle of March at the Fourth International Conference on Future Energy by a colleague of Scott’s from Malaysia. It was emailed to many of us by his brother Charlie two days before Scott died.

Scott’s work can be divided into two categories. One part, containing most of his work at the NRL, consisted of very good, but somewhat routine contributions to several recognized areas of science and technology. There is certainly nothing wrong with that function. It is true of most scientists. Adding bricks to the edifice of science is the normal activity of researchers. It adds eventually-useful literature and keeps scientists “in the game” with the possibility of making really significant contributions, those which open new sub-fields. If Scott later proves to be a significant pathfinder, it will be for his theoretical work on the mechanism causing LENR. That would, possibly and eventually, make the case for his genius. Years, or maybe even decades from now, LENR will be recognized as a historic field of research and fundamentally understood. It may be that few or none of Scott’s ideas survive the rigorous scrubbing by the Scientific Method. But, some of his concepts might prove to be durable. Whatever the outcome, his ideas and their communication helped stimulate the field of LENR and challenged scientists within that field from around the globe.

To more fully put Scott in context it is worthwhile to consider the spectrum of scientists, whatever their subjects. For some legitimate and productive, if not trail blazing scientists,

research is just a job. There is nothing wrong with that. But, for many scientists, their “work” is a delight, something that hardly seems like work in the usual sense. They take great pleasure, a so-called “psychic income,” from contributing to the world’s knowledge and from their associations with other scientists in many countries over the years. But, for many scientists, doing research is a compulsion, which extends to the point of addiction. Government or university bureaucracies, complex and frustrating as they are, can degrade but not destroy the highs from being a scientist. In extreme cases, research is a “drug of choice,” one that can have great benefits, but still might negatively impact the scientist junkie. Scott was not at the extreme end of the spectrum, utterly and totally addicted to his studies. But, he was far towards that end of the spectrum (as is this author). And, that impacted his entire life for a very long time.

One final passing and personal note about Scott should be made. He loved to sing, and joined a church choir a few years ago. Singing apparently provided him with a disciplined and pleasant outlet for his enduring vocal energies. I do not know if he had any other hobbies over the years. Probably, his research was both his vocation and avocation.

Scott is survived by his wife Anne Pond, their son Scott, and twin daughters, Kathleen and Lauren. Gifts in memory of Scott can be sent to The New Energy Foundation, The Scott Chubb Cold Fusion Fund, P.O. Box 2816, Concord NH 03302-2816 or to the John Calvin Presbyterian Church, 6531 Columbia Pike, Annandale VA 22003.

Chandre Pande, who worked with Scott at Brookhaven, wrote me recently about him: “I remember his ever present smile punctuated by his infectious laughter. He was a popular figure.” Many of us will remember Scott as a thoughtful, productive and provocative scientist with a radiant smile and an effervescent personality to match.



Scott Chubb at ICCF-14 in 2008 (from Duy Tran) and ICCF-10 in 2003 (by the author).