



Dr. Joe Sumakeris during his last year, before passing away this past November after a long courageous battle with prostate cancer.

Joe was 49 years old, and is survived by his wife and three children.

Joe earned his PhD in Materials Science from NC State, and spent his entire career at Cree working in Silicon Carbide.

Joe was quite a prolific publisher in the field with more than 61 papers which were cited more than 1160 times.

Joe loved his work in the SiC field and being part of this community, and always looked forward to these conferences.

Joe was a wonderful person with a great sense of humor while being a really accomplished scientist and expert in the field.

Joe will be missed by many.

Joe Sumakeris

I am John Palmour, an NCSU graduate and a co-founder of Cree, Inc. I first met Joe Sumakeris around 1992. I was out at Cree and he was in grad school under Dr. Robert Davis, who had also been my advisor. Joe contacted me to see if I could run some experiments for him on a tool that we had at Cree, but he did not have access to at NCSU. I grudgingly said yes, feeling bad for this poor grad student, remembering how I also had to beg for favors while in school. Then I sat on the samples for a couple of months because I was just too busy on more important things. After being prodded by Joe, I finally ran the etches that he had asked for, and handed them off to him. As it turns out, I basically ruined the samples that he had waited so patiently on. While I had probably set his degree back by at least 6 months, he never complained. He just shrugged his shoulders and said thanks for the help. That was my first lesson with Joe....he was a patient and forgiving soul.

Several years later, in 1995, after completing his degree, we somehow convinced him to come to work for Cree, despite my previous effort to derail his research. He came straight out of grad school, and began a 20 year, very distinguished career at Cree, chock full of great challenges and great accomplishments.

I am speaking now not just from my perspective, but from the perspectives of everyone he worked with, because they all observed the same traits in Joe. He was always a very calm, and very sharp thinker. He never lost his cool. One of the stories from grad school days was that he had a system with a crack in a viewport, potentially leaking out all sorts of dangerous gases under vacuum. He just looked at the system, then to the other grad students in the lab and said "yeah, that's not good. I think we should leave," and he just got up calmly, turned all the machinery down safely and left the lab..." Most if not all would have freaked out....

He was also had a very keen mechanical mind, and his mechanical abilities were always amazing. In grad school he apparently regularly would build and/or fix other students systems (from deposition systems to rebuilding mechanical pumps just for fun). No system was too big or complicated for him. So when he went to Cree to work, the first feedback NCSU got back from (probably Calvin) was "we knew Joe was hands on, but we did not know he was feet on as well!" Apparently he had to climb on some equipment to fix it and impressed everyone....Nobody at NC State was surprised to hear this.

Joe rapidly went from being a newbie at Cree to being a very key member of the team. He excelled not only at the mechanical / machine part of the job, but he also had a very keen analytical mind. He could take a problem, do a literature survey, form an idea and pursue it. Then he could take a ton of data, and slice and dice it all sorts of ways to find trends that were real, and discount those that weren't. One of my most favorite memories, because it was me who was in deep trouble, was when we were having a huge device yield issue when we went from 3 inch wafers to 4 inch wafers. Despite all of the data saying that we should be fine, we were absolutely getting killed on yields. We had looked at everything we could think of and just could not figure out what was going on. In an all-out panic, we called in Joe and some others to help us figure it out. We explained what was going on. Even though this was not Joe's area of responsibility, he knew some things about a few parts of the process and dug in. A few days later, Joe called me up and said, "Hey, if you have some time, I think I may have found something in the data." What he found that no one else could was that actual problem, I knew it right away when he showed me how he parsed the data. It correlated to the position of wafers in one particular tool. We immediately contained the problem, and shortly thereafter, Joe helped us fix that tool.

One of Joe's toughest challenges came with a pretty esoteric degradation phenomenon that was discovered around the year 2000. The problem was considered so big and bad, that a major international company, after spending more the \$50 M, decided to exit the SiC field, because they determined that "it could never be fixed". After looking at the issue, Joe searched the literature, conferred with other experts in the field, and formulated a plan. In less than 2 years, Joe had developed not one, but two ways to defeat this problem. This was a HUGE deal!! What happened after that? I am going to say something that his children will have a hard time wrapping their heads around, because no teenager ever thinks of their father in this way.

Joe Sumakeris became a Rock Star!! A real, honest to god, scientific rock star. Now maybe he wasn't selling out arenas like some rock stars, but for the next 4 years or so, when Joe was giving a talk at an international conference, the conference hall rooms were filled to the brim...standing room only, and people spilling out the door, all trying to hear the latest developments from Joe on this particular topic. The topic was "voltage drop degradation as result of stacking fault growth initiated at Basal plane dislocations during minority carrier recombination" Nuff said on that!

So what does a high powered scientist do to top this kind of scientific success? How do you possibly follow up such a pinnacle of scientific achievement?

Well, you head home, grab an old washing machine, and rearrange it to develop the baddest automatic chicken plucker you have ever seen. Yes....Joe did that. He had these rubber hose "fingers" lining the spinning bottom of the washer and the spinning side of the barrel, and these rubber fingers would gingerly pluck the feathers of the chicken carcass in no time at all. This was supposedly a Christmas gift for Elisa.....Joe was indeed a thoughtful husband. He made a You Tube video of his creation, and you can still see it today. Truth be told, I heard that it was little rough on the chicken, resulting in a few broken drumsticks, but still an achievement that is just as astonishing to me as that degradation thing I mentioned earlier. You see Joe was a very smart, handy, yet humble person, who was a championship tinkerer, be it at work or home.

I had the pleasure of eating lunch with Joe most days at the Cree Café. A group of 10-15 of us gather at the same large table everyday for erudite discussion on current events, sports, physics science fiction, trivia, and completely sophomoric humor. Our ability to combine pop culture, quantum physics, and 13 year old boy humor all within the same sentence is legendary. While we find ourselves to be very entertaining, it has not gone unnoticed that women rarely, rarely, join us. If they do, they fake a polite smile, roll their eyes, and never come back. But....for us, for me anyway, it is a highlight of the day. We give each other a lot of grief, and Joe was no exception. Even though Joe was one of the nicest guys I ever met, trust me....he could throw the snark with the best of us. But...it was always in the name of a laugh, and was always good natured.and if Joe heard me say that these lunches were the highlight of my day, he would have immediately said, "Well John...that is a very sad statement about how you spend your days."

We also got to travel to a number of foreign countries with Joe for conferences. Our questionable behavior at these events was also pretty legendary. The interesting thing about Joe was that he really enjoyed going out with us, but he really never got out of control. He was always the bemused observer of the rest of us being stupid in one way or another. He would just laugh and shake his head at us, like "you guys are NUTS!"

Joe almost always scheduled extra time around these conferences so that he could take the time to experience what the area really had to offer. He would get Adrian or someone else to go early, and/or stay on in a location so that he could see the sights. Joe was much more focused on the experience in life than any materiality, and I think that is a very healthy thing. He wanted to experience locations, life, family and friends.

When Joe was diagnosed, he followed a familiar pattern that had always served him well. He searched the literature, conferred with experts, and formulated a plan. When the results were not as desired, he regrouped, did more research, and came up with a new plan. He did it all with an incredibly positive attitude. He never complained or moaned or groaned about what life had dealt him. He just said, “Yeah, that’s not good,” and went to work to fix it.

I told Joe and Elisa a few months ago that nothing impressed me more than the positivity and the grace that Joe showed during this fight. As I have talked to people who only knew him professionally, and did not witness the fight, even they said the words “he always conducted himself with grace”.

It is very difficult to capture someone in a few minutes. But on behalf of everyone at Cree, I want to say that Joe was an exceptional scientist, an exceptional colleague, an exceptional friend, and most importantly an exceptional human being. He was characterized by incredible grace at all times. While he was not able to solve this final challenge that took him away, he will always be a rock star in our eyes. He will be sorely missed.