

It is my sad duty to inform you that Michael Patrick Cava died on 29 Sep 2010 in Brookline, MA, after a six-year battle with Parkinson's disease. Professor Cava was a synthetic organic chemist with international renown. The funeral was on 01 Oct 2010 in Brighton, MA.

Mike's first wife, the former Esther Laden of Duluth, MN, whom he married in 1951, died in 1996 of cancer. Mike is survived by his son, John (an architect, born 1953, living in Portland, Oregon), by John's companion Kayla, and their daughter, Sophie Rose, born in 2006. Mike is also survived by his second wife, Armelle [Guinard Laden] Cava (formerly wife of Esther's late brother Norman) who moved from St. Germain-en-Laye, France to marry Mike in 2000, and then courageously nursed him through Mike's long and debilitating illness. What Armelle did for so many years from love and devotion, few people could have done. In May 2010 Armelle moved Mike from Tuscaloosa to the Boston area.

To summarize Mike's chemistry career, Mike was born in 1926, attended Harvard University (1942-1946; B. S. in Chemistry, 1946) and The University of Michigan (1946-1951: M.S. 1948; Ph.D. 1951). He was a post-doctoral research associate at Harvard University (1951-1953), then started his academic career at Ohio State University (1953-1965: Assistant Prof. 1953-1958, Associate Prof. 1958-1963, full Prof. 1963-1965), moved to Wayne State University (1965-1969, Professor of Chemistry), then to the University of Pennsylvania (Professor of Chemistry, 1969-1985), and finally to The University of Alabama (first Robert Ramsay Professor of Chemistry, 1985-2004). He became Emeritus Professor of Chemistry of The University of Alabama in 2004.

Mike published 454 articles and co-authored an organic chemistry textbook. He graduated about 75 Ph.D's at Ohio State, Wayne State, Penn, and Alabama. I have lost count of how many post-doctoral associates he has tutored. Several of his former students have gone to illustrious careers in Universities: the late Prof. Boris Weinstein (Stanford), the late Prof. Richard H. Schlesinger (Rochester), Prof. Viresh Rawal (Chicago), Prof. Alex Jen (Washington - Seattle), and Prof. Sanandan E. Velu (UAB). Mike had decades of support from the National Institutes of Health, and the National Science Foundation. Mike was like a Sherman tank, difficult to start, but unstoppable once it is set in motion on any scientific subject. Here is a brief synopsis of his major achievements:

1. **Benzocyclobutene, o-Quinodimethane, and Analogs.** About 40 publications since Mike reported the first synthesis of benzocyclobutene and the first generation of the transient species benzocyclobutadiene and o-quinodimethane. He elaborated much of the basic chemistry of these systems, which others have expanded in recent years into powerful synthons for natural products synthesis.

2. **O-Quinonoid Carbocycles and Heterocycles.** The early interest in o-quinodimethane (o-xylylene) evolved into the synthesis of the quinonoid carbocycle pleiadene, and the synthesis and properties of a number of highly reactive o-quinonoid heterocycles, as well as the first non-classical condensed thiophenes. Among other highlights in this area, one may mention the only practical synthesis of iso-thianaphthene and the discovery of the base-promoted Pummerer reaction. Oxidative polymerization of isothianaphthene and analogs has led to a series of interesting conducting polymers.

3. **Organotellurium Chemistry.** In addition to describing the first synthesis of KTeCN, various organic tellurocyananes, and some novel tellurium heterocycles, this work has contributed to synthetic methodology. This includes tellurolates as dehalogenation catalysts, telluroxides as aldol catalysts, and tellurones as selective oxidants.

4. **Tetrathiafulvalenes and Its Selenium Analogs.** Since 1975, about 25 publications have appeared, of great interest in the area of synthetic metals. Highlights of this work include the most practical route to tetraselenafulvalene, and the first synthesis of bis-(ethylene-dithio)tetrathiafulvalene (BEDT-TTF, or ET), the much studied donor component in about 40-odd organic superconducting salts.

5. **Conducting Polymers and Related Oligomers.** About 25 publications described conjugated conducting polymers and a variety of both linear and cyclic oligomers related to

conducting polymer systems.

**6. Alkaloid Chemistry.** More than 90 papers describe the isolation and structure determination of many alkaloids (mainly indole and isoquinoline-derived), as well as some transformation chemistry and total syntheses. A few highlights are the structure determination of some complex *Halophyton* bases, the first synthesis of the marine alkaloid aptamine, and the highest-yield synthesis of several marine alkaloids.

**7. Miscellaneous Natural Products.** Other natural product studies include: (a) structure determination of andrographolide, (b) steroid transformation products containing 4-membered rings, (c) the synthesis of mycelianamide, (d) the synthesis of CC-1065 analogs, and (e) the synthesis of the anthraquinone derivatives nidirufin, aklavinone, and 4-demethoxydaunomycinone.

**8. Molecular Rectifiers.** A much improved synthesis of hexadecylquinolinium tricyanoquinodimethanide helped to establish it as a unimolecular rectifier of electrical current. This paper was highlighted by Science News as one of the 7 best chemistry papers of 1997, and has resonated through the field of molecular electronics.

All this despite a childhood bout of polio: Mike's legs were weak, but he walked everywhere, with an ambling gait. A recurrence of post-polio syndrome in 2000, and the onset of Parkinson's disease in 2003 finally put an end to Mike's work schedule.

In Tuscaloosa two symposia were held in his honor, in 1985 and in 2001. On both occasions, synthetic chemists from many universities gathered to be with him, and to give tribute to his vision, his gentlemanly attributes as a former colleague, co-worker, or mentor, and to report on what has happened to several subfields of chemistry since his seminal and original contributions.

At other times organic chemists with international reputations would come to Tuscaloosa to be with Mike, give research seminars in the Chemistry Department, talk chemistry, and enjoy the hospitality of his house: I will only mention two of the many: Marye Anne Fox and Sir Derek Barton. Mike's friends claimed that he never had a "political agenda" within the departments in which he served, and that, instead, he was a true intellectual, interested in the acquisition of knowledge, and a gentleman, who was genuinely interested in the welfare of his students and his colleagues.

Mike was an accomplished composer of music in the baroque style; some pieces were played by his School of Music friends at the University of Alabama.

Mike had an encyclopedic knowledge of all the good old pre-1940 organic chemistry (mostly written in German), and could remember synthetic pathways with infinite detail: Mike spoke slowly, with a deep voice, and greatly enjoyed anecdotes.

Much of his later activity would not have been possible without the help of Dr. M. V. Lakshmikantham, a Senior Research Scientist from India who helped Mike organize the research group, and contributed her own superb skills as a sulfur chemist for four decades. Mike and "Lakshmi" were known to many of you as a "dynamic duo". Mike was the idea person; Lakshmi was the disciplinarian with a heart of gold. But in 2004 both Mike and Lakshmi retired, when their health forced them to do so. As I informed many of you, Lakshmi died in Tuscaloosa on 20 Jan 2006 at age 74 of congestive heart failure.

Mike and Lakshmi cleaned out their laboratories during the move from Lloyd Hall to Shelby Hall (it was a big physical effort for Lakshmi) and sold the chemicals; the proceeds of the sale plus unexpended research funds were used to set up the Michael P. Cava Lecture fund for an annual lecture. The first Cava lecturer was Prof. Richard R. Schrock of MIT on 29-30 April 2009; the second lecturer was Prof. Jerry Meinwald of Cornell University on 28-29 Oct 2009. Prof. Kyriacos Nicolau will hopefully be the third Cava Lecturer in Fall 2011. Mike also left his personal library, which was set up initially as a library and meeting room, and then converted to a library-classroom; we plan to erect a brass plaque honoring Mike next to its entrance.

Michael was born in Brooklyn, New York on 13 Feb 1926, the son of Italian immigrants (his father was a physician of Sicilian origins, his mother was of Calabrian

origin). Mike contracted poliomyelitis as a child, but survived, with weakened legs but an indomitable spirit.

When growing up in Brooklyn, Mike developed a deep love of chemistry. When he was seven, he received a chemistry set as a gift: it “quickly became the source of [his] favorite amusements: [He] loved the colored precipitates, the hydrogen sulfide, and the small hydrogen explosions. Later [he] expanded into pyrotechnics, and then discovered the endless pleasures of organic synthesis” [from M. P. Cava, “More than Forty Years of Organo-sulfur Chemistry and Many Other Studies”, *Sulfur Reports* **21**: 43-79 (1998)]. Mike and his childhood friend Jerry Meinwald got busy with chemistry sets in an unused kitchen in Jerry’s house. Jerry, a lifelong friend, now Professor Emeritus at Cornell University, last visited Tuscaloosa as the second Cava lecturer in Oct 2009.

Mike attended Harvard University, where he showed a gift for languages (good German and passable French), and even took courses in Swedish, just for fun. His basic chemistry sets “bored [him], until in [his] last year [he] took a special course on penicillin chemistry taught by a fascinating young professor named Robert B. Woodward” [(1917-1979), Nobel Prize 1965]. After graduation, Mike attended the University of Michigan at Ann Arbor, where he worked under the supervision of Prof Werner E. Bachmann. Prof. Bachmann died in 1951 while Mike was working on his doctorate, so Dr. André S. Dreiding took over the direction of Mike’s dissertation. [Prof. Dreiding, born in 1919, the inventor of the Dreiding models, is still alive in Switzerland in 2010]. After obtaining his Ph.D., Mike returned to Harvard, where he worked (1951-1953) with Prof. Woodward, with whom he carried out the total synthesis of strychnine.

Esther Laden was an Army nurse during World War II, where she earned several battle ribbons, and studied psychology at the University of Michigan, where she met and married Mike. She “kept up” with Mike by pursuing her own career. She followed Mike through his academic moves, earned a master’s degree from Boston University and a doctorate from Ohio State University, and law degree from Temple University. She also had a bookstore in Columbus, Ohio.

In Philadelphia Mike and Esther bought a mansion in Lower Merion, a woodsy suburb of Philadelphia, very close to the Barnes Foundation Museum; this mansion had been built by Edward Bok, and where Rudyard Kipling had stayed as a guest. This fine old mansion had something like 15 bathrooms, and the upkeep was a huge financial burden. Mike moved from Philadelphia to Tuscaloosa to avoid the rigors of cold winters: he was very afraid of falling on ice.

In Tuscaloosa Mike and Esther built a very modern house, designed by their architect son John on the model of an old Roman villa, with a swimming pool in the back. Mike was always cautious, and carefully saved money for his retirement.

People that Mike did not particularly like he called “characters” (Lakshmi was less generous, and called them “goons”). Mike was neither an academic politician, nor an empire-builder, nor a self-promoter: he let his chemistry speak for itself. He did promote the career of chemists who were junior to him or not yet well known in the United States, but deserved broader recognition: he mentioned to me Kyriakos Nicolau, Amos B. Smith, III, and George Olah. Unfortunately, Mike never got the awards and accolades that an organic chemist of his eminence deserved. He did get an Alfred P. Sloan fellowship and a John Simon Guggenheim Fellowship. I tried to promote his nomination to the United States National Academy of Sciences, but no avail.

Mike’s contributions to synthetic chemistry are wide and deep. He obviously enjoyed the challenge of roaming through several sub-fields of chemistry. Mike appreciated the utility of what he did, listened intently to the possibilities of practical applications, and used his truly encyclopedic knowledge and enthusiasm to pursue new synthetic challenges and goals. He traveled widely, to Brazil, France, India, Iran, Italy, Japan, Korea, Nigeria, Russia, and Thailand, in some cases to collect exotic plants from which alkaloids could be extracted. He collected several ornate walking sticks, and interesting art (e.g. a Rouault).

Mike had a very positive influence on The University of Alabama. Prof. Drury S. Caine recruited him in 1985 to the Chemistry Department faculty.

A valid measure of Mike's contribution is the following. In 1995, and again in 2010 the National Academy of Sciences and National Research Council rated all research doctorates in all fields in all U. S. Universities. In 1995 the University of Alabama Chemistry department was rated 94th (out of 166) on the basis of 1993 data, in the middle of the third quartile. In contrast, in 2010 the Chemistry Department rated 37th (on 5th %tile basis), in the second quartile out of roughly 180 programs using 2005 data, i.e. in the middle of the second quartile (top 25% to 40%): that was an impressive, almost incredible jump, to which Professor Cava contributed mightily.

When Mike and Esther moved to Tuscaloosa, Esther taught part-time in the Psychology Department and the Law School of the University of Alabama. She had written a book "Parents' Guide to Successful Child Rearing (Exposition Press New York, NY, 1972; Second printing 1977) and even a mystery novel "Let's Kill All the Lawyers" (Vantage Press, New York, NY, 1991). She became "the soul" of the Psychology Department, acting as counselor and mother-hen to so many students, and making small parties for every occasion. She was an ardent supporter of women's rights in the South, a strong liberal, who threatened herself with donating money to ultra-conservative causes if she did not lose a certain amount of weight by a certain date. Mike and Esther would go to separate professional meetings, unless the location was interesting to both. Mike and Esther both loved to go to Jamaica, where they became life-long friends of Prof. and Mrs. Magnus. And they last went together to Russia in about 1995, on a river-boat symposium on organic chemistry between St. Petersburg and Moscow. Instead of a wake, Esther asked that a "fun" party be held in her name: Mike gladly honored her wish.

For the last several years Armelle, Mike's second wife, cared for Mike's every need, doing everything possible to make his invalid state as bearable as possible. Those of us who saw him in the last few years and months would talk to him, but it was impossible to hear what he tried to say to us. How sad for such an effective communicator! Armelle endeavored to create around Mike a classic French "salon", à la Mme. de Sevigné, by inviting a Who's Who of Tuscaloosa society to discuss music, politics, literature, whatever, fueled by excellent wine and tasty morsels.