

# Martin “Marty” Rudat

## Graduate education

Chose Cornell University for Analytical Chemistry MS and PhD. Thesis focused on a detailed evaluation of the effects of a new type of imaging mass spectrometer (secondary ion mass spec) on quantification of the signals for spatial determination of the composition of a random solid. Studied a range of ion signals, bombardment ion types, and low-pressure gaseous or vacuum atmospheres on all available pure (solid) elements, and the effects of certain instrument settings and detection devices. Published 11 peer-reviewed papers, most of which had ca. 100x - 200x more information per paper than other publications regarding related phenomena.

## Work-related information

1978 – Started employment with DuPont in the Central Research Department’s Analytical Science section, at the Experimental Station in Wilmington, DE, using two-dimensional mass spectrometry for important company R&D needs. With my boss, published a 3-part series in JACS on capturing radicals and analyzing their structures using a special radical-capturing molecule (TCNQ) in the ion source of the mass spec, as well as other papers.

1984 – Transferred to the Textile Fibers Department’s Pioneering Laboratory (where Dacron, Orlon, Kevlar, Nomex, and other products were devised and developed), also at the Experimental Station, doing mass spec work in support of R&D programs.

1986 – Became Technical Group Manager (TGM) of the Pioneering professional analytical science group, the 43 technicians doing analytical services for the researchers in the facility, as well as professionals at two manufacturing plant sites.

1989 – Became TGM responsible for all R&D work at Pioneering that was not focused on biosimilar polymers (e.g., spider web-like fibers), including polymeric, carbon, and superconducting fibers, both for long-range R&D and in support of the near-term goals established by various Fibers businesses (e.g., biodegradable polyester). Devised a new financial structure for Pioneering to control costs while improving the responsiveness of R&D to business needs.

1991 – Became Technology Planning Manager for the DuPont Composites Division, which was seeking to play a major role in the aircraft and automotive industries.

1992 – Became TGM for Kevlar pulp (similar to wood pulp, but using Kevlar aramid polymer) in Richmond, VA. A major end-use for Kevlar pulp was and is as a replacement for asbestos in brake shoes.

1995 – Transferred to Flooring Systems (mostly residential and commercial nylon carpet fiber) in Dalton, GA, as a Senior Research Associate doing End-Use Research, working on nylon stain and soil resistance technologies and their proper use by customer mills, as well as static-control technology.

1998 – Named Manager of the Installation Technology team to devise new approaches for the full range of commercial flooring products (carpet, vinyl tile, etc.) that were better, safer, and lower-cost, on behalf of the commercial flooring installation and maintenance business that DuPont bought. The team’s work was responsible for millions of dollars of additional profits over a 3 year period.

2001 – Trained as a Six Sigma Black Belt, I worked on issues in the commercial flooring installation business prior to returning to the End Use Research role.

2004 – DuPont sold most of the nylon businesses, the Dacron polyester business, and the Orlon acrylic business to Koch Industries (Charles Koch). I continued in the same role, and also devised projects that were scouting for and evaluating potentially-valuable new technologies.

2007-2009 – Developed a new anti-soiling technology using nanoparticles (branded as LotusFX) which reduced fluoropolymer use on our fibers by up to 90% while retaining equivalent soiling resistance and

liquid repellency. I was awarded several patents in this area. Commercialized in 2008 on Stainmaster carpets and 2009 on Antron carpets, the technology saved Koch tens of millions of dollars.

2012 – I was recruited by Crypton Superfabrics, which had set up a business with a commercial carpet mill partner, but had numerous issues that needed to be resolved for which my expertise was needed.

2013 – After 17 months and an increasingly acrimonious relationship with the husband and wife company owners about the mistakes that they had made before hiring me, but blaming me for them, I retired.

2013-2014 – Provided key information to the lawyers involved in a 3-way lawsuit between Crypton, their supplier, and the customer mill, which led to the settlement of the dispute by the supplier paying almost all the mill's multi-million-dollar claim. Shortly afterward, both Crypton and their supplier were sold by their proprietor owners to venture capitalists.

### **Personal information**

August, 1975 - I married Caroline Mueller (Scripps '75) in her home town of Los Alamos, NM. Caroline joined me in Ithaca, NY, attended SUNY Cortland for her Masters in Education, and then worked in Ithaca's elementary school until I finished my PhD work in 1978.

1978 – Before starting with DuPont, we took a 6-week trip to Europe using \$99 each way promotional airfares and Eurail Passes, and staying in youth hostels or other low-cost lodging. Starting in Amsterdam, we visited Denmark, Sweden, Norway (going up to the Arctic Circle), Germany, Austria, Switzerland, and returned from Luxembourg.

1980s – I designed and had built a passive solar house in Chadds Ford, PA, near Longwood Gardens (former DuPont estate). It performed better than any published references that I could find as of 1990.

1985 – Had fraternal-twin girls. One went to Georgia Tech and then Rice for her Masters, and now lives in Seattle, where she works for a high-end residential architecture firm, and her husband formerly worked for Amazon, and now NetFlix. The other went to UGA and Emory for her Masters, lives in suburban Atlanta, and her husband is also a software engineer, working for an oncology R&D firm.

1988 – Had a son who went to Georgia Tech and MIT for his Masters in Systems Engineering (particularly aerospace). He initially worked for Aerospace Corp. in LA and later Virginia, but is now the Program Manager for the TESS satellite that is seeking evidence of other planets as a pre-screen for the Webb telescope, and is an upper-level manager within the Kavli Institute at MIT.

1990s – We enjoyed (and still enjoy) car trips to different places, and I realized that we could set a goal for our kids (and us) of visiting all 50 states by the time that they each graduated from high school (including re-visits of some when they were too young to remember), which we actually did. The girls' 50<sup>th</sup> state was Alaska, on our only cruise ship tour, along the coast and into Glacier Bay. The final state for our son was Hawaii, since he was *in utero* when we went with our 2-year-old girls. We also took the girls, since they did not really remember their earlier visit as toddlers. Each devised an individualized plan for their souvenir collections: hat pins, or key chains, or "unusual" ones, which they have kept.

1995 – Modified the design of an under-construction house in Chattanooga, TN, and moved in.

1996 – When the business offices moved from Dalton to suburban Atlanta, designed and built our 4<sup>th</sup> new home in Atlanta, which ended up being a 17 month ordeal with the builder. Also went to the 1996 Olympics in Atlanta with our kids.

2013 – Bought our home in Sedona, AZ, from the children of the original (1987 construction) owners, not far from Caroline's sister and her husband. Over the next 5 years, we periodically drove back and forth to/from Atlanta until our house there finally sold in late 2018. I have upgraded many aspects of this house and property, and we enjoy living here. We back up to a top-ranked golf course (two greens and a driving range wide), and look out at the beautiful red rocks of Sedona. (No, neither of us plays golf, and yes, we do get an assortment of golf balls in our yard, even on the other side of the house!)

## **Hobbies and interests**

Architecture: I've enjoyed designing our homes (including revisions of this one), and we have gone to see over 100 Frank Lloyd Wright houses and buildings, touring as many of them as possible, including some private tours by gracious owners.

DIY: I like to DIY as many projects as possible, including design/specification, carpentry, kitchen layout and construction, wood and vinyl plank flooring, electrical, plumbing, etc. And my own yard work.

Ancestry and interesting historical facts: I wanted to find out more about my father's family (he was born in Germany), so I got an Ancestry.com account, expecting to be done in a few weeks. Years later, I now have a Tree with over 33,000 people on it, covering my own (fairly sparse) German and UK background, Caroline (Edward Doty of the Mayflower turns out to have been one of her ancestors), our kids' spouses (Italian and Eastern European ancestors), in-laws, and more, with some parts copied from others' research that go back to old European royalty, Roman emperors, and ancient Scandinavian, English, and Irish rulers, nobility, and clan leaders. Interesting history surrounds some of these people, which is the kind of information that normal education never has time for, but which I find fascinating.

Model trains: I had an HO train layout as a kid, and decades ago decided to build an N gauge display as the ideal combination of size, available models, and manageable detail. I received lots of N gauge buildings, track, cars, engines, etc., as birthday presents, but I have yet to build the layout. Now that we have a Golf Garage but don't golf, I have a place to put it. But first I have to move the water heater, remove the garage door and lifter, and make a few other changes...but it is on my "To Do" list ("coming soon"). Caroline and the kids will be shocked when I do it!

Travel: We continue to enjoy traveling. Just prior to the Reunion, we went on an 8000 mile trip to bring tools and supplies to our son in Boston (for his newly-acquired 125 year-old house), see the total eclipse in Arkansas, visit our daughter and friends in Atlanta, see Gulf Shores, Alabama, eat good food and look at grand old houses in New Orleans, visit some state parks along the way, and then home. Last year, we went on a Caravan Tour to Costa Rica; a West Coast driving trip to Death Valley, Frank Lloyd Wright and other houses in LA, and up the Pacific Coast Highway from LA into Washington; and an East Coast driving trip covering Atlanta to Maine and back (managing to visit some friends and see all the kids, of course). Later this year we'll get out of the heat in June-July by going north through the mountains to Canada and their Pacific Coast including all of Vancouver Island, Seattle, and Portland, then later view the Fall colors along the East Coast from Upstate NY, VT, NH, and Boston, and down the Appalachian Mountains, for a total of about 21,000 miles for the three trips this year. In 2019, we did a cross-Canada trip from the I-15 crossover in Montana to Nova Scotia, visiting interesting places, museums, cities, etc., then to Maine for lobster and Caroline's favorite place (in Downeast Maine), racking up 9000 miles. When we lived in Atlanta, we went on trips as far away as the Indian Reservation at the NW tip of Washington, Los Angeles (where my mother still lived), Acadia National Park in Maine, and Key West in Florida, visiting most of the 50 states (as part of our objective for the kids to see all 50 before high school graduation, and devising "themes" for the trips, like "The Oregon Trail Trip" and the "13 Colonies Trip") from there. For our 50<sup>th</sup> anniversary next year, we're planning a "bucket list" trip, but have not yet decided on the destination(s).

At a family get-together at a "cabin" in the Smoky Mountains in 2022. The photo includes Caroline and me, our son and his long-time girlfriend, and our girls and their husbands. Everyone in the family (none of them have any kids).

