

Remembering Jim Crivello, former Editor, *Chemistry of Materials*



James V. (Jim) Crivello, Professor of Chemistry at RPI and former *Chem. Mater.* Editor, passed away suddenly on February 26, 2015. Jim was an outstanding scientist, teacher, and individual who will be missed greatly by all who knew him.

Jim was a member of an increasingly rare group of scientists who started their careers in industry, transitioned to university, and thrived in both environments. He joined the General Electric Corporate Research and Development Center in Schenectady in 1966 after receiving his PhD in organic chemistry from Notre Dame University. In his 22 years there, Jim was awarded over 100 patents and received the highest possible honor for a scientist at GE CRD, a Coolidge Fellowship, which enabled him to spend a year with his family as a visiting professor at the University of Mainz in the Federal Republic of Germany. He also received two IR-100 awards (Research & Development magazine; “The Oscars of Invention”—*The Chicago Tribune*.) and published over 40 papers in scientific journals.

The manager of the GE CRD Chemical Laboratories at that time, Dr. Alan Hay (now Tomlinson Chair Emeritus in Chemistry at McGill University), in his nomination letter for Jim’s ACS Fellow Award, noted, “In his 20+ years at General Electric he was certainly one of the most productive chemists we have ever seen. He was able to function in a manner that should be considered the ideal for any industrial chemist, i.e., do research which has great significance to the company that results in proprietary knowledge protected by Patents while, at the same time, performing the research in such a manner that it is publishable in the best scientific journals.”

A key accomplishment in that period was his development of a new class of photoinitiators, also known as “Crivello Salts,” initially designed for inducing cationic polymerization of epoxy resins, which opened the door for the first wave of additive manufacturing systems as well as in microelectronic patterning.

Much of the current 3D imaging and printing technology in use today employs epoxy resin technology and cure chemistry based on work done in his laboratory. For the 50th anniversary of the *Journal of Polymer Science*, the editors selected his paper on the photodecomposition of sulfonium salts as a means for microelectronic patterning and additive manufacturing as one of the 50 most influential papers that had been published in that journal since its inception.

After coming to R.P.I. in 1988 as a full Professor, Jim continued his work on cationic photoinitiators, while expanding into several new areas of polymer synthesis and application. During his career at both institutions, Jim published over 250 scientific papers, which have received, to date, over 8000 citations. Eighteen of these papers, published in *Chemistry of Materials*, received over 600 citations. Since 2000, Jim’s papers have averaged around 350 citations each year, attesting to the extraordinarily high impact his work has had on the fields of polymer and materials chemistry. In addition, he added 37 more patents to his impressive list based on his work at Rensselaer.

Jim’s contributions to polymer materials science and technology have been recognized by major awards from two ACS Divisions. In 2007, he was elected a Fellow of the ACS Division of Polymeric Materials: Science and Engineering and in 2009 he was awarded the Herman F. Mark Senior Scholar Award by the Polymer Chemistry Division of the ACS. Also in 2009, he received the Outstanding Achievement Award for Photopolymer Science and Technology for his “Invention of photoacid generators and its contribution to advancement of microlithography”. In 2011 he was named as an ACS Fellow, and last year he received the prestigious PMSE Tess Award, “which recognizes outstanding individual achievements and noteworthy contributions to coatings science, technology and engineering”.

In 2000, Jim joined *Chemistry of Materials* as an Associate Editor and served with distinction for 13 years. His many years of experience in organic and polymer chemistry research and his wide range of professional contacts enabled him to secure quality reviews in a timely manner. His contribution of a Perspective (“Photopolymer Materials and Processes for Advanced Technologies”), along with co-Editor Elsa Reichmanis, to the 2014 Special Issue, culminated over two decades of outstanding contributions to this journal.

Aside from his achievements in science and technology, Jim was an extraordinary human being. He had a reputation among his students as a tough, no nonsense teacher and mentor, who expected a lot but gave a lot in return. However, those who knew him saw a kindhearted, gentle and modest soul with an amazing intellect, sense of humor and a warm, generous personality. The following messages in the Guest Book accompanying his obituary in the *Schenectady Gazette* serve to illustrate the type of person he was and the great respect and affection to which he was held:

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"I was a close collaborator with Dr. Crivello on a variety of projects during his GE and RPI days and considered him a brilliant and creative chemist and, always, a delightful gentleman. We are the poorer for his passing but the richer for having known and worked with him."

"Jim was an excellent scientist—that is a thought that comes to mind as I think about him. Another thought is about the little shelter that he built for his daughters where they would wait for the bus. I lived nearby and would think when I saw this building that there must be parents living there who really loved their little girls."

"James Crivello was not only an outstanding scientist. In particular, he was also an exceptionally warm-hearted colleague and friend"

"Jim impacted so many people during his life and I was one of them. He was a mentor and teacher to me at GE. He was one of the most talented Chemists I ever met. But mostly he was our cherished friend. Memories of Chemist Beach, the Organosilicon Symposium, creating the Reed lectureship and so many others will remain with us forever. He was a true one of a kind."

"I am deeply saddened by the sudden passing of Dr. Crivello, my doctoral thesis advisor and mentor. Dr. Crivello taught us how to be astute scientists and focused on solving real world problems—with a practical bent. His perspectives have guided me through out my career, and I am going to miss him dearly."

"The Crivello lab was the envy of fellow grad students, Jim taught us to work hard while having fun. He taught me how to rollerblade, and would spontaneously take the group out for hike or ski trip on "too nice of a day". I remember the yearly picnics where we tested the kayaks/canoes we built with Crivello chemistry and the wonderful Christmas parties decorating the tree. The whole world benefited from Jim's chemistry, but a select few who were fortunate to be mentored by him are blessed by his legacy. "

Leonard V. Interrante, Editor-in-Chief, 1989–2013

■ AUTHOR INFORMATION

Notes

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.