

Remembering



Carlos A. Murillo

1951-2021



National Science Foundation



Carlos A. Murillo

On November 6, 2021, the Division of Chemistry at NSF (CHE) lost a dear colleague and a close friend, Dr. Carlos Murillo.

Dr. Murillo led the Chemistry Instrumentation program (including MRI) with dedication and effectiveness, having been an able advocate since his NSF arrival from Texas A&M (TAMU) in 2007. He also managed the ChemMatCARS award, supporting and growing a national synchrotron X-ray facility for chemistry and materials research at the Advanced Photon Source in Illinois. Throughout his years at NSF, he remained research-active via adjunct appointments at TAMU and U. Texas-El Paso. Among his notable research contributions were the development of methods for the synthesis of compounds with metal-metal bonds, and improved understanding of the structure and behavior of these interesting compounds.

Carlos was a founding member of the National Academy of Sciences of Costa Rica, an AAAS Fellow, and an author of more than 300 scientific publications and two books: *Advanced Inorganic Chemistry* (with co-authors F. Albert Cotton, Nobel Laureate Geoffrey Wilkinson, and Manfred Bochmann) and *Multiple Bonds Between Metal Atoms* (with co-authors F. Albert Cotton and Richard A. Walton). He is survived by his wife Debbie (Pflugerville, TX); brother Jorge Murillo (Irvine, California); and family in San Joaquín de Flores, Heredia, Costa Rica: sisters Haydee Murillo Barrantes, Clara Murillo Barrantes, Blanca Rosa Murillo Viquez, daughter Maria Gabriella (“Gaby”) Murillo, son-in-law Diego Alonso Arias Alfaro, and grandchildren Santiago Alonso Arias Murillo and Estefanía Arias Murillo. Carlos will be sorely missed by his family, friends, and colleagues throughout NSF and the chemistry community.

Dr. David B. Berkowitz
Division Director
Division of Chemistry
National Science Foundation

Early Career



Carlos was a native of Costa Rica.

He studied chemistry at the Universidad de Costa Rica (UCR) and then pursued his PhD at Texas A&M University (TAMU), where he worked with F.A. Cotton. He did his Postdoc training at Princeton U.

Carlos rose through the ranks to full professor at the University of Costa Rica between 1977 and 2002.

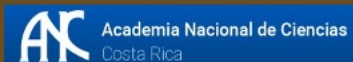
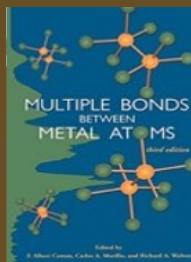
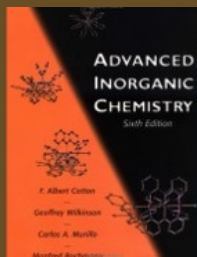
He then joined the Department of Chemistry at TAMU as the Executive Director of the Laboratory of Molecular Structure, before moving to his current position at NSF.

Contributions in Those Early Years



Carlos was a founding member of the National Academy of Sciences of Costa Rica, an AAAS Fellow and an author of two books:

- Advanced Inorganic Chemistry (with co-authors F. Albert Cotton, Nobel Laureate Geoffrey Wilkinson, and Manfred Bochmann 1999)
- Multiple Bonds Between Metal Atoms (with co-authors F. Albert Cotton and Richard A. Walton 2005)



Beloved NSF Program Director



Carlos served as the Program Lead of the Chemistry Major Research Instrumentation (MRI) Program, with dedication and effectiveness, a great mentor and a strong advocate for those in needs.

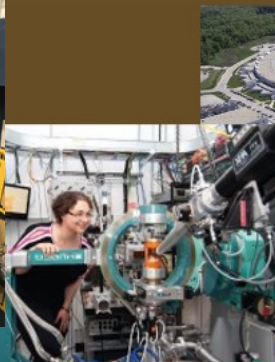
"I remain devastated to hear of Carlos's loss. He was an amazing man, and very supportive of our efforts and me. I could tell that he was ill, but he never spoke to me about the specifics. He was a very private man in this way. All of our precautions through Covid have made the last year that much harder as we have lost so many special people while not having been in their presence. ...

May we all have his resiliency and hope."

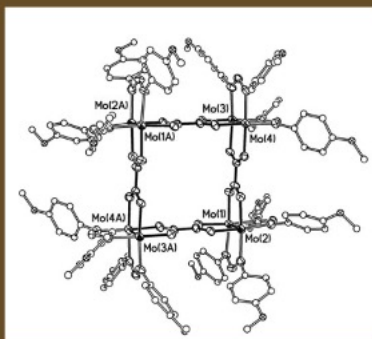
Rigoberto Hernandez

Gompf Family Professor of Chemistry
Johns Hopkins University

Carlos was instrumental in overseeing and managing the chemMatCARS Facility that supports chemistry and materials research at the Advanced Photon Source, at DOE's Argonne National Laboratory. Carlos also contributed to the CAT, SYN, and CHE Mid-Scale programs.



Remaining Research Active



Square and Triangular Arrays Based on Mo_2^{4+} and Rh_2^{4+} Units

J. Am. Chem. Soc. 1999, 121, 18, 4538–4539

- Carlos' primary research interests were in the study of compounds with metal-metal bonds. Among his most notable contributions are the development of methods for the synthesis of such compounds at high temperature and the better understanding of the structure and behavior of these interesting compounds.
- He published more than 300 scientific articles with ~12,000 citations.
- He remained research active through his IRD (Independent Research & Development) program at TAMU and U. Texas-El Paso.

An active hiker, a lover and observer of birds and nature



Sugarloaf Mountain, MD credit: Kelsey Cook



Sugarloaf Mountain, MD credit: Kelsey Cook



Credit: Kelsey Cook



Words from Colleagues and Friends

Dr. David Berkowitz

Division Director
Division of Chemistry/MPS
National Science Foundation

“It is with great sadness that I write to you all to let you know that our friend and colleague for so many years, Carlos Murillo, passed peacefully this evening, at home in Texas with his wife Debbie at his side.

Words cannot capture the profound impact that Carlos has had and will continue to have on all of us, and on the Chemistry Community. I know this is very difficult to process, and we will all need time and reflection to find peace. Our thoughts are with Debbie and Carlos’ family in Texas and in Costa Rica.

Carlos spoke from the heart and always exuded an empathy that was genuine; an empathy that was surely grounded in the humble roots that Carlos spoke of so proudly. His character, work ethic, pride and professionalism and special smile will live on in all of us as we remember Carlos. May his memory be a blessing.”

Dr. Matthew Platz

Former NSF CHE Division
Director
Professor of Chemistry
The University of Hawaii at
Hilo

“I am very sad. He was a brave man who never complained and always persevered. I am glad I got to know him some and am the better for it. What a loss to the family and all of academic chemistry.”

Dr. Luis Echegoyen

Former NSF CHE Division
Director
Robert A. Welch Professor of
Chemistry
Past President – American
Chemical Society
University of Texas at El Paso

“Carlos was a good friend of mine for over 40 years and our friendship intensified during our shared NSF days and continued until the very end. He was a prime example of dedication, knowledge, ability, strength, ethics and responsibility. He was the perfect colleague and the perfect friend. My future visits to the DC area will never be the same, I will sorely miss him.”

Dr. Lin He

Deputy Division Director
Division of Chemistry/MPS
National Science Foundation

“I admire Carlos for his integrity and dedication to work, his love to science and friends, and his thoughtfulness and care to his PIs. Carlos will always be in my mind, reminding me how to be a better person and how to bravely embrace this world and the life.”

Dr. Daniel Rabinovich

Associate Dean and Professor
of Nanoscience
Joint School of Nanoscience
and Nanoengineering
North Carolina A&T State
University and UNC Greensboro

“While I knew about Carlos’s research career by reading his multiple publications with Al Cotton, I got to know him much better when I worked at NSF (2009-11) and we both lived in the same building, across the street from NSE. Whenever we would run into each other we would speak in Spanish (also my native language) and exchange all kinds of stories about chemistry, our families, personal projects and ideas, etc. Three words come to mind when I think about Carlos as a colleague: service, empathy, generosity. And two words summarize how I will remember him: pura vida!”

Words from Colleagues and Friends

Dr. Andrew Lovinger

Program Director
Division of Materials Research/MPS
National Science Foundation

“The MPS Distinguished Lectures Working Group mourns our beloved member, Dr. Carlos Murillo, whom we lost following his heroic 13-year-long battle with cancer. Carlos was admired as a Program Director both throughout NSF and across the chemistry community. At NSF, he was always a tremendous resource in chemistry and chemical instrumentation, as well as a tireless champion of diversity. In the broader community, he is widely remembered for his prolific research in inorganic chemistry and his textbook in that field. Carlos was always admired for his excellence, dedication, thoughtfulness, wisdom, and modesty. May he rest in peace and may his memory be a blessing and a continuing inspiration.”

Dr. Julio C. de Paula

Former NSF CHE Program Director
Professor of Chemistry
Lewis & Clark College

“I’m deeply saddened by the news. Please convey my condolences to Carlos’s family and to everyone at NSF.”

Dr. Daniel Neumark

Professor of Chemistry
Department of Chemistry
Berkeley College of Chemistry

“Oh no! I am so sorry to hear this.”

Dr. Mahesh K. Lakshman

Fellow of the Royal Society of
Chemistry
Faculty Opinions Professor
Department of Chemistry and
Biochemistry
The College of New York

“It is very saddening to hear about the passing of Carlos. While we did not interact a lot, the few interactions that I did have with him led me to believe that he was kind, considerate, compassionate, and friendly. I am truly sorry to hear this news and all the best.”

Dr. Smita Mohanty

Professor of Chemistry
Vice Chair, Equity Advocates Council
Adjunct Professor, Biochemistry &
Molecular Biology
Oklahoma State University

“In the early morning hours on November 13, 2021, I received a forwarded message from NSF about my dear friend, colleague, and mentor, Dr. Carlos Murillo. It was a devastating news. I didn’t know how to come to terms with this heart-breaking reality.

I met Carlos first in 2010 when I was part of his Major Research Instrumentation (MRI) panel. I loved to work with Carlos so very much as a panel member. Whenever he called me to ask if I was available (at times in a short notice when one of his panel members would drop out for some reason), I always grabbed the opportunity since I just loved to work with Carlos in his panel. Carlos made us, the panel members so comfortable that it was always a joy to work with him in his panel. Carlos has helped me so much with my struggle being a woman of color and of international origin. I would always reach out to Carlos for advice and support. Despite his own struggle with cancer, Carlos had always been there for me-giving a lot of his time over phone. He had even shared his cell phone number with me so that I could reach him. I feel so deeply sad of losing a great friend, and mentor at NSF that I feel lost now without Carlos. I can imagine what it must be like for his wife and his family as well as everyone at NSF. My deepest condolence to his wife and family, and to his colleagues at NSF. We miss you, Carlos. Rest in peace, my dear friend.”

Words from Colleagues and Friends

Dr. Marcetta Y. Darensbourg

Distinguished Professor of Chemistry
Department of Chemistry
Texas A&M University

“Thanks to whomever wrote this wonderful memorial of Carlos. Whenever he came to College Station he would drop by the lab and check on us. Always with a happy spirit. He and his friend David Rockliffe, also with a TAMU connection, attended my NAS induction ceremony. Carlos and I coauthored one paper together I am happy to say. May he rest in peace. He deserves no less.”

Prof. Dr. Herbert W. Roesky

Department of Chemistry
University of Göttingen

“That is very sad news about Carlos. He promised to come back to Germany because we had together with his wife a nice tour around Göttingen. Moreover, I was in College Station and we had a good time together. I will miss him very, very much he was a real gentleman.

Please give to his wife my sad feelings. Thank you and best regards.”

Dr. Jennifer S. Pearl

Science & Technology Advisor
Directorate for Engineering
National Science Foundation

“I just saw that Carlos passed away. My sympathies to you and the whole CHE Division. What sad news. May his memory be a blessing for all of you.”

Dr. George Janini

Program Director
Division of Chemistry
National Science Foundation

“Carlos was an avid hiker with much experience with hiking in different weather and detailed knowledge of most of the trails in most of the state and federal parks in Virginia and Maryland. He was endowed with an excellent memory and a good sense of position and direction within the thickest of wooded areas. He is a lover and observer of birds and nature. I had the pleasure of hiking with him on a few occasions, especially in the last year, but nothing like the thousands of miles over many years that he logged with Kelsey. However, I had the honor of capturing a memorable moment in Carlos’ life. I could not resist taking a picture of him in a pose that shows him in peace with his favorite surroundings. This, I believe, is the last picture taken for him when we were hiking together in the one before his last hike. His last hike, about a week later, was with Kelsey, days before he departed to be with his family in Texas.”



Photo Credit: Dr. George Janini

Words from Colleagues and Friends

**Professor
Rigoberto Hernandez**

Gompf Family Professor
of Chemistry
Department of Chemistry
Johns Hopkins University

“I remain devastated to hear of Carlos’s loss. He was an amazing man, and very supportive of our efforts and me. I could tell that he was ill, but he never spoke to me about the specifics. He was a very private man in this way. All of our precautions through Covid have made the last year that much harder as we have lost so many special people while not having been in their presence. I was able to last see Carlos during our reverse site visit for the review of our CCI CSN back in February 2020. That was nearly my last trip before the pandemic shutdown... And yet, I can still picture his smile. He was also my host when I gave an MPS Distinguished Lecture in 2016. He joined me for dinner and made little fuss over what he could or could not eat. Instead, he focused on what could be done to advance science and the diversity of our community. May we all have his resiliency and hope.”

Dr. Tanya L. Whitmer

Director, Research Support
Services Manager
CBC NMR & EPR Facility Research
Scientist, CCIC Solid-State NMR
College of Arts and Sciences
Department of Chemistry
and Biochemistry
The Ohio State University

“Dave’s note with news of Carlos’ passing was shared with me. Please accept my deepest sympathies during these difficult times.”

Gloria Yancey

Program Support Manager
Division of Chemistry/MPS
National Science Foundation

“I was lucky enough to work with Carlos and got a chance to see what a great colleague he was. Carlos is “Gone but never forgotten!” I will miss him dearly.”

Melyni McGriff-Williams

Retired Employee of NSF

“I worked in the same office with Carlos Murillo. He was a sincere, thoughtful, and very genuine person. He will really be missed!”

Marsha Hawkins

Program Analyst
Division of Chemistry/MPS
National Science Foundation

“I had the pleasure of working with Carlos for 14 years when I started my career at NSF/CHE in 2007. Upon my arrival, Carlos was one of the first people I met. We shared a small cubicle workspace because, at that time, the Chemistry Division was being remodeled. We got to know one another in that workspace, we bumped chairs, we laughed, and we had lengthy conversations about anything --you name it. I was assigned to his programs (CRIF, and MRI) and we worked together from then until his last days. Carlos was a great friend and the best colleague that you could have! He was very knowledgeable, and if he didn’t know the answer he was going to find out for you. He was dedicated, a hard worker and his word was his bond. Carlos’ job on earth is now complete. He did an excellent job, and it was certainly my pleasure to have met and worked with him for all those years.

Now he must rest -no more pain, doctor appointments, or suffering - You deserved your wings!

I will surely miss you - Fly High my Friend, Fly High!”



From Marsha Hawkins

Words from Colleagues and Friends

Dr. Carol Bessel

Deputy Division Director
Division of Industrial Innovation
& Partnerships
National Science Foundation

“I have fought the good fight, I have finished the race, I have kept the faith.” 2 Timothy 4:7-8.

Carlos certainly did fight a good fight! Suffering for years with debilitating illness, Carlos taught us all to focus on what was most important – family and friends, working for the benefit of others, searching for both scientific truth and beauty in Nature.

When I think of Carlos there are so many images that come to mind –

- Talking about his grandchildren with a sparkle in his eye. Their pictures were highly prized and showcased in his office. He loved to read to them even if it was long distance;
- Working with Bob Kuczkowski and Marsha Hawkins to make 99% GPRA, year after year, no matter how heavy the panel load;
- Coordinating trips to ChemMatCARS with Bob, Lin He, and me where Carlos convened a such a magnificent “master class” of student users that even the astronomers had stars in their eyes;
- Hiking the long, frigid, icy C&O Canal with Kelsey Cook, Evi and Mike Goldfield, and Shing Ho during the federal government shutdown;
- Advocating for the underserved, Carlos persistently passed the hat during spend-out, gathering the very last pennies from CHE and Randy Phelps in OIA so that one more instrument request could be granted to a school demonstrating need and promise;
- Organizing outreach trips to Puerto Rico and Texas where his Spanish language-proficiency authentically bridged the gap for underrepresented communities; and
- Identifying as a true life-long scholar – continuing to collaborate and publish at an unparalleled volume and quality - even working with the medical community to help develop treatments for patients suffering similar illnesses.

Carlos was always a gentleman – faithful to his wife, Debbie, and his entire, extended family, passionate advocate for science and the underserved, true friend, and hard worker. He will be sorely missed – though his legacy will be enduring.”

Dr. Robert Kuczkowski

Professor Emeritus, Chemistry
U of Michigan

“I am deeply saddened by the loss of Carlos but blessed by the memories of working closely with a master program officer and dearest friend. Bob Kuczkowski.”

Words from Colleagues and Friends

Dr. Kelsey Cook

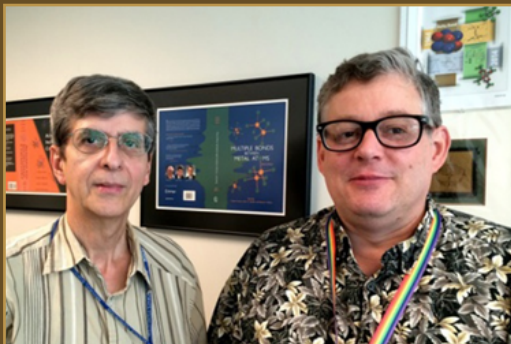
Program Director
Division of Chemistry/MPS
National Science Foundation

“Earlier this year, Carlos and I estimated that we had hiked well over 5,000 miles in the past 15 years, initially in increments of 4-10 miles with occasional outliers, and gradually diminishing to 2 miles on our last hike, September 12. In those 5000 miles, we saw a wide array of flora and fauna, including orchids (which he especially loved), exotic fungi, eagles, osprey, and swans. No matter how often we encountered deer or turtles, each one merited a pause and a small excitement. Carlos would go out of his way to look for minnows in a stream, or to avoid a snake, which he remembered all too well from Costa Rica. It was all about the journey, not the destination.

We talked about everything – politics, religion, chemistry, bureaucracy, biology, medicine, health, nutrition, dogs, neighbors, family, and friends. Carlos was a font of knowledge and wisdom. He was a scientist to the core of his being, as reflected in the carefully controlled experiments he did on himself to determine that his surgery had rendered him intolerant of fructose. Neither his surgeon nor his primary care physician nor the dietician to whom he was referred after the initial cancer surgery had any notion about this sensitivity – he detected, analyzed, diagnosed, and treated it himself. It might have starved him had he not figured it out. The piece he wrote about it was shared by his doctors with subsequent patients, but to my knowledge was not included among his more than 300 scientific publications.

It was a rare day I didn't learn something new during our walks, or during the cool-down which followed, often featuring Virginia peanuts and adult beverages. You know for yourselves and have heard from others what a remarkable, capable, brilliant, and determined man and scientist he was. He was a remarkable friend and human being. It is obvious that I miss him. I am grateful to have enjoyed his friendship. We made it at least to Milepost 69 on the C&O canal – I would have loved to have gone farther.”

Memories with Colleagues and Friends



Memories with Colleagues and Friends





Carlos A. Murillo
1951 - 2021



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DIVISION OF CHEMISTRY

National Science Foundation
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