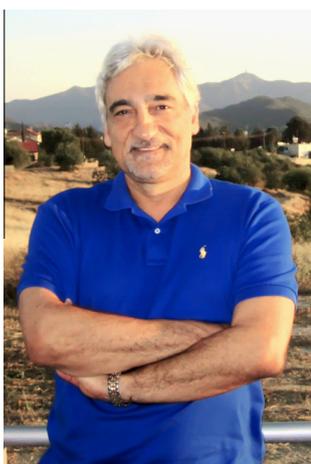




Preface

George Christou at 60: An Appreciation



It is a great honor and privilege for us to be involved in this special issue dedicated to Professor George Christou on the occasion of his 60th birthday. This is an acknowledgment not only of his great scientific impact in the fields of Molecular Magnetism and Bioinorganic Chemistry, but also for his being a source of inspiration and stimulation for many scientists throughout the world.

George was born in Limassol, Cyprus, in 1953 where he spent the first years of his life before moving with his family to the U.K. He obtained his B.Sc. and Ph.D. degrees from the (now defunct) Department of Chemistry at Exeter University, the latter under the tutelage of H. Norman Rydon. Postdoctoral stints with Dave Garner (Manchester) and Dick Holm (Stanford and Harvard) followed, and he began his independent academic career in 1982 at Imperial College, London, U.K. Subsequently he moved to Indiana University (USA) where, from 1998, he was a Distinguished Professor of Chemistry (1998–2000 James H. Rudy Professor, 2000–2001 Earl Blough Professor). In 2001, he joined the faculty members of the Chemistry Department of the University of Florida (USA), where he is currently a University of Florida Distinguished Professor, holding the Drago Chair of Chemistry. In addition, since 2007 he has been Honorary Professor at University College, London, and the London Centre for Nanotechnology.

George is one of the pioneers of modern Inorganic Chemistry, particularly in the fields of Molecular Magnetism and Bioinorganic chemistry. In fact, he is one of the scientists who discovered the single molecule magnetism phenomenon [1] and the one who first named the metal ion-based discrete molecular magnets as ‘Single-

Molecule Magnets’ (SMMs), a term that is still used for these materials [2]. One of his important achievements in this area was that he has tried to understand the scientific language of physicists, thereby developing a common language for the communication of chemists and physicists and bringing synthetic inorganic chemists, materials scientists and solid state physicists in the field of molecular magnetism closer together. He inspired and influenced several top-quality physicists to enter this area, something that resulted in its explosive evolution and the discovery of several new exciting phenomena. Since the discovery of the SMM phenomenon in 1993, George has been a leading figure in this area, contributing significantly to its further development through a series of breakthroughs which include the following:

- (1) The synthesis and study of a $[\text{Mn}_{12}\text{O}_{12}(\text{O}_2\text{CR})_{16}(\text{L})_4]^{0/n-}$ (R = various; L = terminal solvate molecules; $n = 1-3$) family of SMMs with more than 50 siblings that has been justifiably described as the *Drosophila* of SMMs [3], as it provides an invaluable source of comparative data on this fascinating magnetic phenomenon.
- (2) The observation for the first time of exchange-biased effects in SMMs, a discovery that provides a realistic method for fine-tuning the properties of these species and brings their use as devices ever closer [4].
- (3) The bridging of the “bottom up” and “top down” approaches to nanoscale magnetic materials through the synthesis of a giant $[\text{Mn}_{84}]$ SMM with a torus structure and a diameter of 4.2 nm [5].
- (4) The synthesis of several Mn-Ln (Ln = lanthanide) SMMs, some of which display significant effective barriers to magnetization reorientation and the initial observation of magnetization hysteresis and quantum tunneling steps in heterometallic Mn-Ln SMMs [6].

However, George’s scientific contributions go far beyond the area of molecular magnetism, covering other fields of metal cluster chemistry including Bioinorganic Chemistry and homogeneous catalysis. He has been continuously interested in the isolation of synthetic models of the oxygen-evolving complex (OEC) of photosystem II, with the $[\text{Mn}^{\text{IV}}_3\text{Ca}_2]$ compound he recently reported being the most accurate structural model of the OEC metal core known to date [7] and also he introduced the employment of polynuclear Mn carboxylate clusters in oxidation catalysis [8]. His enormous impact is reflected in his publication list which includes over 530 papers in top quality peer-reviewed journals, citation record (over 20,000 citations, excluding self-citations, Hirsch In-

dex = 80) and his well-deserved awards and honors which are too numerous to be listed here but include prestigious awards of chemical societies and foundations all over the world.

George is also very active in national and international conference organization. He was the founder of the *Florida Inorganic and Materials Symposium (FIMS)* in 2003, which now spans eleven Florida universities and colleges and is held every fall (autumn) in Gainesville. It is targeted at student education and development, and consists of 20 minute talks by graduate students or undergraduates. He is also the co-founder (in 2004 and 2005) and co-organizer of two biennial international meetings: the specialized *Current Trends in Molecular and Nanoscale Magnetism (CTMNM)* Workshops, and the broad *North America-Greece-Cyprus Workshops on Paramagnetic Materials (NAGC)* meetings that encompass paramagnetic ions in any area, from chemistry and physics to biology and materials science. Both workshops deliberately involve many talks by junior scientists (students and postdocs) and are organized mainly in Greece and Cyprus, providing a regular forum for the faculty and students of universities in those two countries to meet and interact with their North American counterparts, as well as colleagues from other European countries and elsewhere. This, in fact, is one of the many ways in which George continuously contributes to the further development and progress of Chemistry research in the country of his birth.

George's great contributions to various areas of transition metal chemistry and Molecular Magnetism and also his activities concerning the organization of conferences and workshops are well known and respected by the scientific community. However, what is probably less known is his unique teaching ability and his influence as a mentor, two things that have had a significant impact on the lives and careers of his students and collaborators. George always finds ways to make the difficult easy for his students and urges them to simplify a problem, break it down into steps, and then look for simple, rather than complicated, solutions.

Below, one of us would like to share some of the memories and views about how George influenced his career and life.

"In fall (autumn) 1983, the Christou group was formed consisting of George, Joey Money, and me (Jeff Seela). George was given a laboratory to use and some initial startup equipment and funds. The laboratory looked like it had been used as a storeroom for quite some time and was a bit of a mess. Joey's and my first job was to clear out everything we didn't want while George stayed in his office working on finding money for the group. Joey and I were spending George's startup money rather quickly, but George managed to always have the money there for us to get what was needed for the lab. After a few months, the laboratory was in order, and we were ready to start our research. During the first year, Joey and I each had success in the lab. I remember the many times George would come into lab, get a flashlight, and check our various glassware for crystals. His excitement at seeing crystals growing was like a kid with a pocketful of money walking into a candy store. He couldn't wait for them to get large enough for Joey or me to isolate and deliver to Dr. John Huffman, IU's world class crystallographer. John never let us down. When the completed structures came back to George, he was always so excited. He would immediately identify what made each new compound special. A few years later the group purchased a two-circle drill and started making models of all the new compounds. I would love to see how many models the Christou group has after 30 years in business.

Not too long into that first semester at IU, a Christou group tradition began. Starting around 4:30 on a Friday, George would start coming into lab and checking on Joey and me. He was making sure we were shutting down our work so that at 5:00 pm we all could retire to Nick's English Hut, a local watering hole. George believed hard work needed to be balanced by some fun time off. The

5:00 pm Friday appointment at Nick's English Hut soon extended to the rest of the inorganic graduate students. We had many a great time at Nick's, came up with some good ideas for work back in the laboratory, filled up many napkins discussing current and future research, and did a lot of serious relaxing.

Once the first school year finished and the summer started, the intensity level dropped. I stayed on campus the entire summer, working on my research. George invited me to his house one afternoon. I remember his wife Kim holding their newborn child as we had a beer. It was great to see another side of George, the loving and caring husband and father. Over the years, George has made it a tradition to bring the group together at his house. I am sure that many of them feel as though they are part of his extended family.

One problem I have worked on my entire teaching career has been how best to help my students learn. I was with George for 5 years and know for certain he has had a major impact on my teaching career. He was never my classroom teacher, but he was my teacher in the lab and I sure learned a lot from him. He knew his subject matter, but it was obvious he wanted to learn more, which made me want to learn more right beside him. He was excited about my work and never failed to acknowledge my successes in the lab (and in the classroom). His acknowledgement of my successes just made me want to try even harder for more positive progress. He always had faith in me which was a great confidence booster for me. I have taught freshman chemistry at least 100 times since 1987. I am still learning how to do it. Many students I have had in the past just needed to have someone believe they can pass the course, they just needed their teacher's vote of confidence. Just like George's vote of confidence in me led me to greater success, so did my confidence in them lead to their success, in my class and beyond.

The years with George were so many different things at times; hard, easy, exciting, frustrating, never boring, rewarding, thoughtful, and challenging to name but a few. I look back with fond memories of them and thank George and many others for the experience."

These memories of Jeff Seela ring true with the other two of us and, we believe, with all graduate students and postdocs that have worked with George. We all remember George's enthusiasm towards research, our enjoyment of learning many new things in the lab and in his classes, and the fantastic time we had in the pubs of Bloomington and Gainesville. One particular story that combines these facets comes from the Irish Lion pub in Bloomington, where beer was sold in both 'half-yard' and 'yard' glasses. Having retired there with the group one evening, George was lecturing us on the technicalities of drinking beer from such vessels, and we were impressed at the depth of his knowledge – he had obviously (or so we thought) done a great deal of research into this. As a thank you, we decided to buy him a half yard (a yard was too expensive on a postdoc salary), and when this was brought to the table he replied "Thanks Guys – I've never had one of these before!"

In addition to being our scientific advisor, George was also a good friend, always willing to discuss and help his students and postdocs not only with their scientific but also with personal difficulties. His house was always open to his co-workers since he often organized parties, and all his students and postdocs have met his wife Kim, his daughter Alana and his son Alex at different periods of their lives and feel as much a part of his family as their own. Even when George's house was burgled (burglarized) not once, but twice, while one of his postdocs (who shall remain nameless) was looking after it, George still wrote him an excellent letter of reference. We all know that George has had a major impact in our careers and lives and we are certain that this is also the case for all his ex students and postdocs.

Realising the limitations of a single journal issue to commemorate such a significant life event as a 60th birthday, we have nevertheless attempted, through the breadth of both topics covered and countries from which contributions have been obtained, to reflect the great esteem in which George is held throughout the world. This special issue of Polyhedron brings together dedicated contributions from former students and postdocs, such as ourselves, colleagues and collaborators from the past and present, and friends from around the world who sincerely appreciate George's contributions in Bioinorganic Chemistry and Molecular Magnetism and to the scientific community as a whole. All papers contain a dedication to George who has been tireless in his efforts as the Executive Editor for the Americas/Polyhedron Reports Editor of Polyhedron since 1998. It is our pleasure to participate in this special issue of Polyhedron honoring the occasion of George's 60th birthday and on behalf of all authors and the scientific community we wish him a very happy 60th Birthday and many more years of success.

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