

Nano Biology, Nano Chemistry, Nano Medicine or Nano Technology Professor Mostafa A El-Sayed

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Editorial

Introduction

Professor Mostafa A El-Sayed has been giving new ideas to the science community all over the world for six decades. I am confident that he still has many things to offer even at the age of 85 when others choose to simply retire. The Electronic Journal of Biology (EJBio) is launching this special issue in celebration of his 85th birthday of Professor El-Sayed of the Department of Chemistry and Biochemistry at Georgia Institute of Technology in Atlanta, Georgia, USA. Prof. El-Sayed has received his B.Sc. from Ain Shams University in Cairo, Egypt, and his Ph.D. from Florida State University (under the guidance of Professor Michael Kasha). He spent a Postdoctoral Fellow at Yale University (1958-1959) and another research stint at Harvard University (1959-1960), then at California Institute of Technology between the years 1960-1961. Before moving to Georgia Tech, he held a long tenure position (33 years) at the Department of Chemistry and Biochemistry at University of California-Los Angeles (UCLA) between 1961 and 1994 [1,2].

There are no biology or chemistry or physical science freshman students whom are usually majoring in Science Technology, Engineering and Mathematics (STEM) who do not know about the Lewis Dot Structure of simple molecules. Gilbert Newton Lewis who introduced the Lewis Dot Structure that STEM students are familiar with is the scientific grandfather of Professor El-Sayed. Prof. El-Sayed finished his PhD under the guidance of Michael Kasha (who finished his degree under Lewis at the University California Berkeley). It is no wonder that Prof. El-Sayed over the last five decades has achieved at least three dozen awards of the highest eminence.

It will suffice to mention half dozen rewards. (1) Guggenheim fellowship award for natural sciences (1965). (2) King Faisal International Prize for Sciences (1990). (3) Irving Langmuir Award which is considered to be the highest ACS award in physical and biophysical chemistry (2002). (4) The National Medal of Science (2007) for his pioneering and

creative work for our understanding of the optical and electronic properties of Nano Materials. (5) Ahmed Zewail prize in molecular Sciences (2009), and (6) The Priestley Medal (the highest ACS award for chemical sciences, 2016).

Nano Technology is defined as "The manipulation of matter on an atomic, molecular, and supra-molecular within the nanometer (nm) scale. Typically, Nano technology manages particles in the range of 1 nm to 100 nm in size. Over the last three decades, there has been a proliferation of journals that carry the theme Nano Science and Nanotechnology. Professor Mostafa A. El-Sayed is considered by the scientific community to be the pioneer and the authority on Nano Technology. A naive and quick Goggle Scholar Search shows that he is one of the most cited scholar of all times. With over one hundred thousand (100,891) total citations, as of March 29th, 2018 and an h-index value of 118, I have to say very few people will ever reach such numbers.

We will give a glimpse of the two most influential papers he ever published along with his students, postdoc associates and coworkers. 1) The, 78 pages long, seminal review by him and his co-workers in *Chem. Rev.* 2005 which contained 921 references therein is the most influential paper ever in the history of ACS with 6776 citations to date [3]. 2) The second most influential paper is the 17 pages, 1999, *J Phys Chem.* section B paper by himself and Dr. Link in which they cited 137 references therein [4]. After the publication of the second paper, I remember it became fashionable among scientists to brag that they are working on Nanodots and Nanorods, a term coined by Prof. El-Sayed. Furthermore, he is the pioneer of the term of Plasmon. It is clear from these two seminal papers the great work done in the new area of Nano Sciences introduced by Prof. El-Sayed. There are many achievements that one can cite for Professor El-Sayed; the most notable achievements are the areas of photochemistry, ultrafast LASER spectroscopy, time-resolved Raman spectroscopy, and the El-Sayed Rule to name a few [5]. He was honored by former two USA presidents; in 2007 he was honored in the white house by George W. Bush with the US-National

Medal of Science in Chemistry. Also, in 2014 he was appointed by Barak Obama as a member of the president's National Medal of Science Committee. I will refer the reader to the complete biography and the complete profile of professor El-Sayed at the website of Georgia Institute of Technology [6].

I had the honor of meeting Prof. El-Sayed many times during the ACS-National meetings. The first time however, was during the bi-annual Gordon Research Conference for Metals in Medicine in 2014 at Andover, New Hampshire. During that conference, the author learned a great deal from Prof. El-Sayed's seminal presentation in Nano Medicine and cancer treatment. Without asking him, he started giving valuable advices to the author as if he is his own postdoc associate or PhD student. I learned later that I was not alone in that regards in which the author learned that Prof. El-Sayed gave many valuable advices to Former Noble Prize Laureates such as the late Professor Ahmed Zewail. We wish Professor Mostafa EL-Sayed a long, healthy, productive, life

full of more contribution to science and the scientific community. We also wish him gaining more deserving prizes to add to his lengthy list of awards and prizes.

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