**INTERNATIONAL CONFERENCE ON VISTAS IN CHEMISTRY, INDIRA GANDHI CENTRE FOR ATOMIC RESEARCH, KALPAKKAM**

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It is indeed a pleasure writing this perspective for the Souvenir being brought out on the occasion of the International Conference on “Vistas in Chemistry”, to be held at IGCAR, Kalpakkam.

Chemistry is being celebrated this year for its myriad contributions to the wellbeing of humankind. Hundred years ago when Madame Curie was awarded the second Nobel Prize, the science of chemistry was at its infancy. Looking back, it is amazing how far we have come in these hundred years. Just like a potter spins a mass of clay and conjures up new shapes or forms, chemists put together diverse atoms to create new molecules and materials. Chemists have become master manipulators of matter, creating new forms and shapes, of both, exquisite beauty as well as functions fulfilling the prophecy of Marcelin Bertholet (1827-1907) that “Chemistry creates its own objects. This creative power, similar to that of arts, distinguishes it fundamentally from other natural sciences”.

Chemical science has transformed our world and our ideas. Our physical environment, our material culture, our conceptual systems, and our manner of living have been changed, are being changed, and will be changed by chemical science.

In the beginning of the twentieth century, the combinatorial power of tetrahedral carbon was unleashed. Chemical synthesis led to the creation of new molecules, small and large, with diverse applications in all walks of human life. By the mid thirty`s chemists began to understand the nature of the chemical bond and the structure of organic molecules. This set the stage for the next revolution in chemistry, namely, the synthesis of nucleic acid and proteins which are the central actors of biological chemistry. A new discipline, molecular biology, was born in the fifties out of chemistry`s womb.

Chemistry has always been the earthiest and the most central of all the sciences. But its earthiness also extends into the huge, complex business enterprises of our day, in energy and petrochemicals, in pharmaceuticals, in the cornucopia of polymers and plastics, in composites and advanced materials, in agriculture and biotechnology, in cryogenics and electronics. Likewise, the centrality of the chemical sciences may be seen in their role in areas as varied as molecular biology, materials science and clinical sciences. Chemistry is essentially a utilitarian science, touching human lives in every conceivable way. Inevitably, chemistry began to be vilified for the ill effects it had on humans, be it at the time of its manufacture or its use.

Chemistry`s success has been its own enemy. Some of its products became so commonplace and necessary that they became “invisible" to the public or even viewed with contempt by some. Unfortunate accidents and poor waste management together with sensationalized media have sparked public fear. The romance of chemistry, which was palpable a hundred years ago, appears to have lost its sheen. Chemistry appears to be in search of the big problems which can rekindle the romance all over again.

Chemistry is at the end of one wave of development and struggling to begin another. From a study of elements and molecules chemistry is beginning to explore molecular interactions, functions and systems. The question is no longer “what is it”, but, “what does it do”. In this endeavor it is increasingly venturing into multidisciplinary space, at the interface of other disciplines such as biology, medicine, physics and material science.

So where can chemists seek their future? What are the big questions that chemists can grapple with which will excite young men and women? Let me list a few. How can we build complex functional molecules from simple molecules of nature, namely, carbon dioxide, hydrogen, water, methane and oxygen? How can we design materials with impossible properties? Why does nature have a chirality bias with reference to amino acids and sugars? Can water become a universal solvent for chemistry? Do we know enough of the allotropes of elements other than carbon? Why is nature carbon centric? How can we create purposeful motion in molecular objects? Can we create “informed matter” from molecules? Is there a chemical basis for consciousness?

There is no dearth of problems that confront chemistry. However, to address them chemistry has to return to its roots, namely, curiosity, intuition, observation and experiments.