

THE SCIENTIFIC PERSONALITY OF LUIGI SACCONI

(From the address at the opening ceremony by Professor Emeritus Vincenzo Caglioti, Emeritus President of the Italian Research Council (CNR); translated by the Editor.)

On the occasion of the opening of the “Symposium on Achievements and Perspectives in Coordination Chemistry” dedicated to Luigi Sacconi, in his seventieth year of age, I would like to express to him, authorities, colleagues, and the entire audience my heart-felt greetings and those of Professor Montalenti, president of the Accademia dei Lincei, as he expressly asked me to do.

Through the years we have followed the tenacious and creative work of Luigi Sacconi, and welcomed with increasing admiration his scientific success which ranks him among the major international figures in the field of Inorganic Chemistry, and in particular, of metal-based chemistry.

Witness of his recognition are the numerous lectures and seminars given at American, English, German, and Australian Universities, at the Academies of Sciences of eastern countries (USSR, Poland, Hungary, Czechoslovakia, East Germany) and the many plenary lectures given at International Conferences.

Witness of his success is the prestigious research centre that he has founded, continuously visited by Italian and foreign scientists and which has provided Italian Universities with numerous young professors.

Witness of his recognition are the numerous scientists gathered here to participate at the Symposium, whom I am addressing also on behalf of the whole Honour Committee.

It is not easy, and anyway outside the aim of this address, to illustrate the results of his extensive research, described in more than 250 articles. I will only mention the synthesis and characterization of a new series of high-spin, five-coordinate complexes with transition metal ions that is almost entirely due to him. Through a systematic study of complexes of this kind performed with the aid of the most advanced tools and techniques, he succeeded in relating the electronic and steric properties of the ligands with their ability to form five coordinate complexes; he also showed that geometrical distortions and the spin states of five coordinate complexes can be rationalized as a consequence of the geometrical requirements of the ligands and of the electronic properties of the donor atoms. As a result of his studies, five coordination is no longer considered unusual.

It is also worth mentioning his earlier work which succeeded in correlating the magnetic properties and structure of metal complexes, thus explaining the so called anomalous behavior of the nickel(II)–Schiff bases complexes. Other research allowed him to determine the thermodynamic functions involved in the formation of metal complexes, and to shed light on the problem of the chelate effect.

Recently he has been engaged in the synthesis and characterization of $3d$ metal complexes with tripod-like polyphosphines and polyarsines. Such ligands have the property of stabilizing uncommon oxidation states of the metals and give rise to unexpected coordination numbers and geometries. Thus, complexes of nickel(I), nickel(0), cobalt(I) and cobalt(0) have been prepared: some of them have the unique trigonal pyramidal geometry. Finally, their hydride derivatives, which are non-stoichiometric, and compounds containing cyclotriphosphorus (δP_3) and cyclotriarsenic (δAs_3) have also been synthesized and characterized.

I think that the discovery of five coordination had a very large psychological impact on inorganic chemists who had been bound to the traditional coordination geometries. The discovery of unusual coordination polyhedra has flourished since then.

Luigi Sacconi is a Florentine and, as such, is sharp, imaginative and rational. I see him worthy of the tradition of two other well known and illustrious chemists who occupied the chair at the University of Florence: Angeli for twenty six years and Schiff for thirty six years, both of whom can therefore be considered Florentine by adoption.

And now let me add a personal note. When I was president of CNR I was criticized for having, as they said, been partial to coordination chemistry. If my behavior has favored the development of flourishing schools and such achievements as those we are here gathered to acknowledge, well, this is something to be really proud of.