Contribution ID: **0** Type: **Invited Lecture**

LECTIO MAGISTRALIS - Chemistry in Italy during the late 18th and 19th Centuries

Sunday 16 September 2012 18:00 (45 minutes)

In the first part of the presentation, the birth of ELECTROCHEMISTRY (1799-1800; March 20th, 1800) and the entirely innovative work of Alessandro Volta, based on the conversion of chemical into electrochemical energy, by what will be called pila di Volta (electrochemical cell), followed by the reverse process studied by Luigi Valentino Brugnatelli (electrolysis and electrolytical cell) will be outlined. The epistemological significance of this discovery, which even preceded the atomic theory, and which will be followed, just one century later (December 14th, 1800), by the revolutionary Max Planck's idea of the energy quantum, will be discussed, leading us to the second part of the talk.

 About 40 years before the birth of RADIOCHEMISTRY, a great debate was taking course in CHEMISTRY, concerning the essence itself of this new-born science, from the question of atomic and molecular weights to periodical properties of the elements and their compounds. Even if about further four decades before, the Avogrado's principle, based on Gay-Lussac's work, had been established, a great confusion existed. The first to have envisaged the potentiality of Avogadro's principle and its correctness has been a young researcher, Stanislao Cannizzaro, born in Palermo (July 13th 1826), who won the chair of chemistry in 1855, at the University of Genoa. In this University, he published in 1858 Sunto di un Corso di Filosofia Chimica, in which he gave the outmost value to Avogadro's principle, by considering that if two gases, in the same temperature and pressure state, contain the same number of molecules, the ratio of their two volumes gives directly the ratio of their molecular weights (what we now call formula weights).

 During the presentation of these principles by Cannizzaro, four years after Avogado's death, at the first International Congress of Chemistry of Karlsrule, in 1860, where also Dmitrij Ivanovič Mendeléev and Julius Lothar Meyer were present, the latter addressed to Cannizzaro a well known appreciation (we were blind, and you gave us back our sight). Interpretation of CHEMISTRY on the light of Periodic Table of elements was the necessary presupposition, 36 years later, to the birth of RADIOCHEMISTRY.

 In the third part of the talk, some leading Italian chemists, organic chemists particularly, who contributed to the growth of Chemistry throughout the 19th century, will be presented.

 At the end, the epistemological connection with the outstanding development of Science in the early decades of the 20th century will be briefly commented.

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