

## 13'ICC Introduction

Ladies and Gentlemen, Dear Colleagues,

As President of the French Chemical Society it is my pleasure, and my honour, to welcome you in Paris.

The French Chemical Society is a very old scientific association created 147 years ago. It tries to bring together chemists of all origins and to defend chemistry. Many divisions, or branches, with different subjects, work, within the Society. Fore example in organic chemistry, materials science, education, etc; and one of the most active is the "Division of Catalysis".

We have a long love story between FCS and catalysis : one of the former Presidents was Paul Sabatier.

This year, 2004, is the 150<sup>th</sup> anniversary of Paul Sabatier and, in the University of Toulouse (which the name is Paul Sabatier University) we are preparing a ceremony in honour of this scientist. Please (allow me), as former assistant of one assistant of Paul Sabatier, in a way scientific grand son of Paul Sabatier... allow me to give some words about him, his career and his fundamental hypothesis. Paul Sabatier was born in Carcassonne, a small town near Toulouse, in the south of France, in 1854. Student at the "Ecole Normale Supérieure" in Paris, then in the "Collège de France" with Marcellin Berthelot, he received his doctorate in physical science in 1880. In 1884, he was named to the chair of Chemistry (created in Toulouse by Napoleon the first fifty years before) when he was thirty, the minimum age for the position.

The Mond's preparation of nickel carbonyl instigated him to study gaseous molecules which might behave analogously to carbon monoxide : he succeeded in 1892 in fixing nitrogen peroxide on copper, cobalt, nickel and iron.

One year later he prepared the experience of Moissan and Mouren with unsaturated hydrocarbons and reduced nickel : he found that ethylene and acetylene were hydrogenated. With his student Jean-Baptiste Senderens, he demonstrated the generality of this method to the hydrogenation of non-saturated and aromatic compounds, ketones, aldehydes, phenols, etc.

In contrast of previous theories, Paul Sabatier postulated that, in catalysis, a temporary instable intermediary between the catalyst and one of the reactants forms on the surface of the catalyst.

This hypothesis was translated in poetic words by the Toulouse's rector Paul Lapie in 1913. Before to read this talk I would like to place its in context.

As a matter of fact before that, in 1909, Paul Sabatier had been elected member of the "Académie des jeux floraux", in English "Floral Games Academy": it is one of the oldest academy in France, created in 1323 and devoted to literature and poetry. When he was received at this Academy he gave a very nice lecture and concluded at the end :

"Science and Poetry are not enemies !"

The rector Paul Lapie, who was not a chemist said, in 1913, during a local ceremony in Toulouse, ceremony in honour of Paul Sabatier :

"What is catalysis ? The favourite method of Mr. Sabatier ?

It is the synthesis whereby two bodies, not having spontaneously a very great affinity, consent to be joined when a metal preside over their wedding.

If some metals exert this curious magistracy, **we knew that before Mr Sabatier**. But we attended to this ceremony only in one case where one joint of the married couple was oxygen.

The toulousain scientist has showed that hydrogen is able to play the same role and he has accurately defined the conditions whereby it is ready for use...

Since nickel, for example, is absolutely necessary for combining acetylene and hydrogen, we must assume that nickel begin to attract hydrogen, but the capricious hydrogen soon break with the metal for joining with acetylene.

Eyes only perceive one combination under the presidency of a passive metal ; mind can explain the facts only by **two weddings separated by one divorce**.

Wonderful is the fertility of this idea ; it is an inexhaustible source of new phenomena... we may count up hundreds of generated compounds..."

Paul Lapie was a poet, and if a poet had understood the message of catalysis I hope all scientists will be also able to do that.

At the moment where chemistry is changing the world with its involvement in nanotechnology, environmental sciences, and medicine

where chemistry adds a lot of successes with the tritherapy in AIDS treatment, and other medical care

with the synthesis of new fibers for intelligent textiles, with the use of supraconductor material for levitation trains,  
where the chemistry is able to detect and to determine the quantity of slight trace of products...  
we need to work together, chemists of all origins and all specialities, to answer the new challenges the Society proposes.  
The last challenge is the development of the "green chemistry" program, with its 12 principles. It is by applying together the 12 principles, acting in concert as a body, that we will work in the direction of sustainable development.  
Catalysis is one of the principles : in my opinion one of the most significant. It is one of the motives I think that your meeting here in Paris was not only very important but essential, absolutely necessary. I hope, no ... I am sure, that your congress will be a success.  
Please, accept all my wishes for your works.

Armand Lattes  
Chairman of the French Chemical Society