GC×GC POST-DOC FOR THE CHARACTERIZATION OF ENERGIE'S NEW FEEDSTOCKS

Title: **Development of GC×GC methods for qualitative and quantitative characterization of new feedstocks (NFS) like pyrolysis oils obtained from plastic and/or biomasses.**

Post-Doc with University of Liege in collaboration with TOTAL.

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Location : in R&D Research Center TRTG of Total close to Le Havre (France)

Objectives of the study :

The production of renewable fuels starting from biomass is mandatory in the medium/long term to partly replace petrochemical products. Dependency on fossil-based energy sources, and energies decarbonation has led to increased interest in becoming less fossil energy-dependent than in the past, although, together with the increasing of the world population, the global energy demand is rising. The use of these biomass resources on a large scale has important implications for the various production chains. Thus, the production of fuels will require the adaptation of the industrial tool and in particular for the refineries to produce bio-fuels on a large scale. This requires a good understanding of the molecular composition of these new feedstocks. Gas chromatography (GC) technique has been extensively employed for the analysis of biofuels, but due to the complexity of these samples and the presence of different heteroatoms (oxygen, nitrogen, sulfur…) compared to fossil fuels, many of these NFS are not completely resolved, and thus characterized, using this approach. The use of the multi-dimensional GC technique (GC×GC) has been proved to be a powerful approach to improve analytical resolution, increasing the peak capacity, and enhancing the identification accuracy in order to obtain a complete characterization of these NFS. For this purpose, GCxGC equipped with different modulators (flow, cryo), and coupled with specific detectors like flame ionization detector (FID), sulfur chemiluminescence (SCD) and nitrogen (NCD) as well as to mass spectrometry (Q-TOF) must be performed.

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