



Science@ifpen



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15 minutes of reading



News

Fundamental Research

Renewable energies

Biofuels and e-fuels

Bio-based chemistry

Responsible oil and gas

Fuels

Petrochemicals



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Catalysis and separation are essential fields when it comes to

conceiving **environmentally friendly innovations** in the energy and chemistry sectors. By combining

catalytic and separation steps, innovative, more **energy-efficient processes** can be developed, with better yields and limiting the production of **by-products**. This has a major impact given that over 80% of the products we use today have undergone one or more of these steps during their manufacturing process!

Drawing on its expertise and advanced methodologies, combining high-throughput experimentation with molecular modeling, IFPEN has established itself as an internationally recognized player in the design of **differentiated catalytic and/or separation solutions**. For example, it is now one of the world leaders for publications and patents in the field of **sulfide catalysis, metal catalysis, acid-base catalysis and molecular catalysis**. It is also actively involved in the development of new sectors, such as **biofuels, bio-based chemistry, or CO₂ conversion**.

Its broad influence is illustrated here by a few studies published recently in liaison with academia.

I hope you enjoy reading this issue.

Denis Guillaume, Director of the Catalysis and Separation Division

Summary:

- **Zeolite based adsorbents and xylene separation**: cracking the combination
 - **Quantum chemistry** sheds light on catalytic mechanisms
 - A catalytic combination for **bio-based plastics**
 - **Cracking heavy crudes**
 - **Effective fuel desulfurization**: a question of orientation
 - **Fischer-Tropsch**: a synthesis process that's still green
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