



## Science@ifpen

Written on 01 October 2014



15 minutes of reading



News

Fundamental Research

Renewable energies

Biofuels and e-fuels

Responsible oil and gas

Fuels

Petrochemicals



The fundamental changes in progress, in today's world energy

landscape, are driving the need for innovation through the development of **new process, catalysts and formulations**. To step up these developments, we need to overcome some major **scientific hurdles** related to the **identification of descriptors for the design, to the modeling of closely coupled phenomena and to the characterization of materials and fluids for energy**.

It is against this background that IFPEN's researchers are working on:

- **reactivity-structure-composition** relationships in oil feeds and biomass;
- **multiscale, multiphysical modeling** approaches;
- **control of phenomena** present in development tools;
- **experimental equipment and methodologies**.

These developments are helping to reinforce our industrial property and scientific visibility, with the annual publication of around 70 patents and 30 articles in high impact journals.

We hope that you enjoy this issue.

**Luc Nougier**, Director Process, Design and Modeling Division and **Dominique Humeau**, Director Process Experimentation Division

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## Summary:

- **Pilot unit reactors**: alea cata est!
  - Stirred, not shaken!
  - **Recovering well** when things get hot
  - **Industrial fixed-bed catalytic reactors**: starting out from the nano scale
  - **Multi-scale simulation** for gas cleaning cost reduction
  - **Enzyme cocktail for hydrolysis**: a recipe that's far from simple
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Issue 18 of Science@ifpen  
01 October 2014

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