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The L'Oréal Foundation has awarded the **L'Oréal-Unesco "For Women in Science" fellowship** to **Céline Pagis**, a PhD researcher at IFP Energies nouvelles/IRCELYON. From **1,000 applicants**, and with 29 other PhD and post-doctoral researchers.

**Céline Pagis** was singled out by the L'Oréal Foundation for the quality of her work as well as her passionate commitment to her profession and her desire to share her research.

Congratulations to this young generation of female researchers who will contribute to future scientific progress!



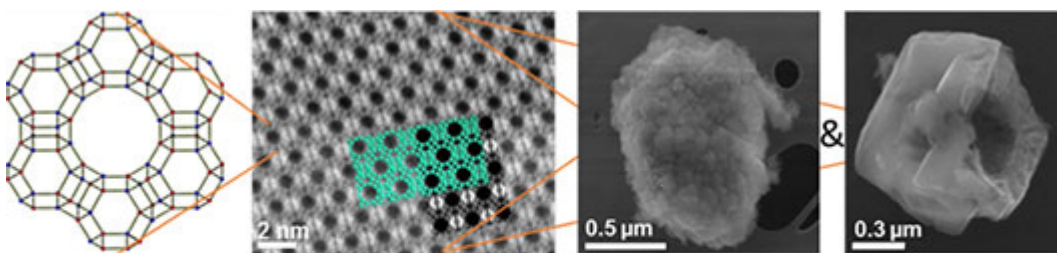
**Prof Patrick Flandrin and Céline Pagis**

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Every year in France, the **L'Oréal Foundation**, in partnership with the **French Academy of Sciences and Unesco**, awards fellowships to 30 female PhD and post-doctoral researchers, to support their promising research activities.

Applied to the field of the **chemistry of materials and catalysis**, **Céline Pagis' thesis** is sponsored by IFPEN and supervised by **IRCELYON** (the Lyon Institute of Catalysis and Environmental Research), a CNRS-Université Claude Bernard Lyon 1 joint research unit. **The aim is to synthesize a new zeolite crystal morphology, in the form of "nanoboxes"**<sup>[1-5]</sup>, with two associated advantages:

- thin walls enabling the accelerated diffusion of molecules within the zeolite crystals during catalytic reactions<sup>[6, 7]</sup>;
- a large internal cavity, making it possible to increase the molecule storage capacity.



**Structure de la zéolithe synthétisée et les 2 morphologies obtenues sous forme de « nanoboîtes » après synthèses au laboratoire.**

The potential of these new materials was jointly tested at IRCELYON for an **application concerning the storage of a molecule that inhibits the ripening of some fruits and vegetables**. Given that more than one third of all fruit and vegetables is wasted between field and plate, this application could

represent a lever for reducing food waste

Experimental tests, conducted at IFPEN on the **HTE platform**, also concerned an application in the field of hydrocracking with a view to gaining an understanding of the diffusion phenomena at play in these new zeolite crystals<sup>[7]</sup>.

It should be recalled that **zeolites are materials that are widely used in industry** for a variety of applications (oil industry, adsorption and separation, gas purification, etc.) since their beehive structure of cavities and channels means chemical substances can be trapped in their pores and molecular transformations accelerated.

**Céline Pagis** is currently a heterogeneous catalysis researcher at IFPEN.



**Céline Pagis**

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## Publications

1. C. Pagis, A.R. Morgado Prates, D. Farrusseng, N. Bats, A. Tuel, Hollow Zeolite Structures: An Overview of Synthesis Methods, *Chem. Mater.* 28 (2016) 5205-5223  
>> DOI: [10.1021/acs.chemmater.6b02172](https://doi.org/10.1021/acs.chemmater.6b02172)
2. C. Pagis, A.R. Morgado Prates, N. Bats, A. Tuel, D. Farrusseng, High-silica hollow Y zeolite by selective desilication of dealuminated NaY crystals in the presence of protective Al species, *Cryst. Eng. Comm.* 20 (2018) 1564-1572  
>> DOI: [10.1039/C8CE00121A](https://doi.org/10.1039/C8CE00121A)
3. C. Pagis, N. Bats, A. Tuel, D. Farrusseng, Brevet FR1752928 - (demande déposée le 04 Avril 2017)
4. C. Pagis, A. Guesdon Vennerie, A.R. Morgado Prates, N. Bats, A. Tuel, D. Farrusseng, Hollow polycrystalline Y zeolite shells obtained from selective desilication of Beta-Y core-shell

composites, *Micro. Meso. Mater.* 265 (2018) 123-131  
>> DOI: [10.1016/j.micromeso.2018.02.012](https://doi.org/10.1016/j.micromeso.2018.02.012)

5. C. Pagis, N. Bats, M. Dodin, A. Tuel, D. Farrusseng, Brevet FR1761379 - (demande déposée le 29 novembre 2017)
6. C. Pagis, F. Meunier, Y. Schuurman, A. Tuel, M. Dodin, R. Martinez Franco, D. Farrusseng, Demonstration of Improved Effectiveness Factor of Catalysts Based on Hollow Single Crystal Zeolites, *ChemCatChem* 10 (2018) - (sous presse)  
>> DOI: [10.1002/cctc.201801225](https://doi.org/10.1002/cctc.201801225)
7. C. Pagis, C. Bouchy, M. Dodin, R. Martinez Franco, D. Farrusseng, A. Tuel, *Oil Gas Sci. Technol.* - (publication soumise)

## Contact



### Céline PAGIS

Research Engineer in Heterogeneous Catalysis – PhD in Material Sciences

Céline Pagis, PhD researcher at IFPEN/IRCELYON, recipient of the L'Oréal-Unesco "For Women in Science" fellowship

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