



## Research Engineer Position : (Bio) Chemical Modeling

If you wish to evolve in a challenging technical environment, if you are autonomous and you have a real capacity to tackle the technical issues encountered by clients, then this job is for you!

### Job description

IFP Energies nouvelles is a public-sector research, innovation and training center active in the fields of energy, transport and the environment.

Model development for (bio) chemical industry has received a great amount of attention by the scientific community over the past decades. IFPEN is a key contributor in this field. It has developed several simulation software which contributes to the development of the technological solutions required by the refining industry.

The corresponding models consist of sets of Ordinary and Partial Differential Equation (ODE/PDE) arising from conservation laws and data science methods (Kriging, Random Forest, SVR, feature selection, bootstrap...)

Several tasks will have to be carried out:

- Suggest paths for improvement to these models: Add some ODE/PDE in order to predict conversion and yield; suggest and test other data science methods for product properties and catalyst lifespan prediction... This might be carried out in collaboration with trainees, PhDs and post-doctoral researchers
- Provide the innovative and effective solutions to emerging industrial problems: optimize the sequence of chemical processes using the developed simulators and some optimization methods like MI(N)LP (Mixed Integer Non Linear Programming).
- Fit new model parameters for each new catalyst
- Publish in leading conferences and journals

### Qualifications

Application-driven candidates with a computational background (PhD) are encouraged to apply. The candidate will work in a stimulating, interdisciplinary environment (analysis, process engineering, applied mathematics...) at IFP Energies Nouvelles (France).

#### Required Skills and Experience

- Degree in Process System Engineering, Bioinformatics, Data Mining/Data Science or Computer Science
- Data Science, Parameters Tuning, Optimization, Numerical Analysis
- Chemical reactions modeling (mechanism description, thermodynamics, kinetics)
- Programming languages : C++, Fortran, Python, R, VBA
- Motivation to work in a trans disciplinary team (experimentation and the main analytical techniques associated)
- English skills
- Good listening skills, rigorous and pragmatic
- Good communication skills, oral and written

### Location

IFP Energies Nouvelles  
Process Division  
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### Contact

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