



## Modeling at BNFL - An Interview with Scott Owens, Research Technologist, BNFL

---

### Introduction

BNFL is an international nuclear energy business, serving Governments and nuclear utilities worldwide, and operating within a highly focused, commercial culture. The company has £2.26 billion annual turnover, with over half coming from overseas. Operating in 16 countries, BNFL employs more than 23,000 people.

Safety is BNFL's number one priority - to quote the website "We recognise it is vital that we never lose sight of our responsibilities to the environment, our workforce and the communities in which we work and live."

Key areas of activity include:

- Fuel manufacture, reactor design and services - following the acquisition of the Westinghouse and ABB nuclear businesses, BNFL is one of the dominant forces in this £2.5 billion a year marketplace.
- Electricity generation - BNFL is responsible for power generation from the remaining operating Magnox stations in the UK.
- Spent fuel services - BNFL is one of only two key players in the global market for the management and recycling of used reactor fuel.
- Decommissioning and environmental services - BNFL is a leading player internationally in decommissioning nuclear facilities and cleaning up the legacy of the Cold War.

### The interview

What follows is the transcript of an interview conducted by Accelrys with Scott Owens, Research Technologist, BNFL.

*1. Which modeling, simulation and/or informatics product(s) does your company use and what role do they play in your research process?*

We have Materials Studio - Discover, CASTEP, DMol 3 , DPD, Amorphous Cell for molecular modeling and also Tsar for quantitative structure-activity relationships (QSAR). These computational tools are used to provide fundamental understanding of processes and derive data for use by engineers. The main aim being to explain chemical and materials processes, for example corrosion and solvent extraction. This work is vital in an industry such as ours where safety is paramount.

*2. What do you use these applications for? How does this work contribute to your company's long-term goals?*

For engineering support and to provide a fundamental understanding of processes. Our main goal is to improve the efficiency of current processes and to operate safely and with as low an environmental impact as possible - this can only be done by understanding how processes and materials behave.

*3. What did the software enable you to do that experimentation didn't?*

Lots! In the nuclear industry these tools are invaluable. Experimentation can be very expensive and comparatively high risk. Carrying out virtual experiments allows us to carry out research that would have been otherwise impossible due to safety risks, reducing the amount of traditional pilot and process scale experimentation.

4. *What would you say are the main scientific advantages of using computation over experimentation?*

In the nuclear industry computational simulation is both cheaper and greener than experimentation. The tools also enable us to gain a fundamental understanding of processes involved.

5. *Did the use of computational techniques save resources in terms of time or money as compared to experimentation?*

These tools definitely save resources - both time and money. For example, resource heavy rigorous safety justifications aren't needed to carry out experiments on the computer.

6. *How quickly did your company/organization re-coup the initial investment in the software (including initial, installation and running costs) in terms of cost savings mentioned in the previous question?*

Difficult to say. Our main aims are to keep plants running smoothly and safely. Computational techniques contribute to these aims.

Copyright © 2001-2008 Accelrys Software Inc.

[Careers](#) | [Legal](#) / [Terms of Use](#) | [Contact us](#)