

## **NUCLEAR TECHNOLOGY EDUCATION CONSORTIUM**

### **N08 PARTICLE AND COLLOID ENGINEERING IN THE NUCLEAR INDUSTRY**

#### **Summary**

Knowledge of particle science is important in a number of technology areas of relevance to the nuclear industry. Particles are used and manipulated throughout the whole nuclear fuel cycle; process improvements are therefore strongly dependent on an understanding of particle behaviour under different conditions. This module will cover all aspects of particle technology that can be considered relevant for the modern nuclear industry. Examples of where particles are relevant within the nuclear fuel cycle will be used to highlight the central importance of this topic area to a nuclear engineer or scientist.

On completion, students should:

- Have a strong understanding of the basics of colloid and particle science
- Have an appreciation of available methods for modelling particle systems
- Understand why particle technology is important for the nuclear industry
- Be able to evaluate current issues and research in the discipline
- Have the skills necessary to undertake a higher research degree and/or for employment in a higher capacity in industry or area of professional practice;
- Be capable of independent learning and the ability to work in a way which ensures continuing professional development; critically to engage in the development of professional/disciplinary boundaries and norms.

#### **Syllabus**

- Introduction to particle technology and its relevance to the nuclear fuel cycle
- Modern particle characterisation techniques
- Introduction to particle modelling
- Particle manufacture and its relevance to nuclear fuel manufacturing
- Solid-liquid systems: aspects of relevance to nuclear waste management