AUSTRALIAN UNIVERSITY TEACHER OF THE YEAR 2011
WESTERN SYDNEY UNIVERSITY

DISCIPLINE
Chemistry

RESEARCH AREAS
Molecular-level visualisation
Visual learning and cognitive load
Interactive multimedia and virtual/augmented reality for learning chemistry

PROFESSOR
ROY TASKER

▶ linkedin.com/in/roytasker

BACKGROUND

In 1985 Roy was appointed as a foundation lecturer at Western with primary teaching responsibilities at first-year level. His research interests were in the use of molecular-level visualisation and interactive multimedia for learning chemistry. In the mid-90s he collaborated with Bob Bucat, Ray Sleet, and Bill Chia, to develop a suite of integrated, molecular-level animations in the VisChem project, and embedded them in videos with teaching resources. Subsequent research with students led to a 'best-practice' learning design for using these resources. Between 1998 and 2001, nine interactive multimedia projects for textbooks in chemistry and biochemistry were developed. He has continued to study the effectiveness of visualisation to support learning, and this led him to a research-based cognitive learning model that has been the framework to inform his teaching and research ever since. He was promoted to Professor of Chemistry Education in 2011.

IMPACT ON LEARNING & TEACHING

Professor Tasker was aware that students struggled to make sense of chemistry concepts, language and symbolism due to an inability to visualise substances and reactions at the molecular level. The challenge in his VisChem project (VisChem.com.au) was to produce animations that portrayed substances and reactions accurately at the molecular level, then develop sequences of learning activities (learning designs) to use them effectively. As a result of the Award his experience with best practice visualisation in chemistry was shared with university science educators throughout Australia in his National Senior Teaching Fellowship in 2014 and 2015. He joined the world-renowned chemistry education group at Purdue University in 2015 to pursue his research and development in molecular-level visualisation in USA.

IMPACT ON CAREER

After receiving the Award in 2011, he was promoted to Professor of Chemistry Education and appointed as Provost at the Hawkesbury Campus for three years. In 2014 he was awarded an OLT National Senior Teaching Fellowship to promote research-informed, best-practice visualisation in tertiary science within Australia. In 2015 he secured a tenured Professorship position at the prestigious Chemistry Department at Purdue University. He now leads a well-funded research group to conduct research and development in the use of dynamic animations, simulations and interactive virtual/augmented reality environments in chemistry education, and in science education generally.

CURRENT ROLE

Professor Tasker has a tenured Professorship at Purdue University, West Lafayette, USA. He was previously at the Western Sydney University (Western) for 30 years. He took up this Professorship to run a research group investigating significant learning challenges in chemistry education where visualisation can play an important role visualizingchemistry.com. He currently teaches graduates and undergraduates, with his research and development focused on best-practice use of molecular-level visualisation for a deeper understanding of chemistry.

WHAT THE AWARD HAS MEANT

Peer credibility | Boost to self-confidence | Opportunity to mentor

MAJOR ACHIEVEMENTS

2015 Presented eight workshops around Australia, and in one in NZ, and hosted a national forum entitled "Research into Practice: Evidence-informed, best practice visualization for a deeper understanding of science;

Accepted a tenured Professorship in the Chemistry Department at Purdue University;

2014 Awarded an OLT National Senior Teaching Fellowship;

Conducted a two-month study tour of 10 Centres of Excellence in scientific visualisation in the USA;

2013 Presented lectures as part of the Austrade-sponsored Australia Future Unlimited in Learning and Teaching Showcase in five major cities in China.

NETWORKS

ALTF | American Chemistry Society Chemistry Education Network | ChemNet | SamNet