

VCE Chemistry Teachers' Conference 2012

Friday 24 February 2012 at La Trobe University, Bundoora

Each participant will have web access to proceedings from the VCE conferences series as part of their registration.

The VCE Chemistry Teachers' Conference is an approved pdi professional learning activity.



Conference Program

8:00am	Registration opens
8:40am - 8:45am	Welcome - Soula Bennett, STAV and Rob Sanders, CEA
8:45am - 9:45am	Keynote Speaker 1 Prof David Karoly, The University of Melbourne <i>Climate Change Science: Everything You Always Wanted to Know, as a Chemistry Teacher</i>
9:45am - 10:15am	Morning Tea/Displays
10:15am - 11:15am	Keynote Speaker 2 Dr David Wilson, La Trobe University <i>Doing Chemistry by Computer – From the Action of Medicines and Proteins, to Predictions of New Chemistry</i>
11:30am - 12:30pm	Workshop - Session A
12:30pm - 1:15pm	Lunch/Displays
1:15pm - 2:15pm	Workshop - Session B
2:15pm - 3:00pm	VCAA Update National Curriculum – A Victorian Perspective Maria James, Victorian Curriculum Assessment Authority (VCAA)
3:15pm - 4:15pm	Workshop - Session C
4:15pm - 4:45pm	Wine and Cheese provided by CEA

Registration information, La Trobe University map and all conference information is available on the **Science Victoria website: www.sciencevictoria.com.au/conferences.html**



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VCE Conference Series 2012

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VCE Chemistry Teachers' Conference 2012

Keynote 1

8:45am – 9:45am

Climate Change Science: Everything You Always Wanted to Know, as a Chemistry Teacher

Prof David Karoly, The University of Melbourne

Climate change has attracted enormous scientific, public and political attention over the last decade. Chemistry is vital to the scientific understanding of climate change, from the infrared absorption properties of carbon dioxide and other greenhouse gases, to monitoring their increasing concentrations in the atmosphere, and understanding their removal through land processes and oceans. This talk will provide an overview of climate change science and the roles that chemistry has played in assessing the causes of observed climate change and in determining the emission reduction targets needed to minimise dangerous climate change. Professor Karoly is an ARC Federation Fellow and leader of the Climate Change theme in the Melbourne Sustainable Society Institute. He is an internationally recognised expert in climate change and climate variability, including greenhouse climate change, stratospheric ozone depletion and interannual climate variations due to El Niño-Southern Oscillation. He was heavily involved in preparation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), released in 2007, in several different roles. Professor Karoly was Chair of the Victorian Climate Change Reference Group in 2008-9. He is a member of the Science Advisory Panel to the Australian Climate Commission and a member of the Wentworth Group of Concerned Scientists.

Morning Tea / Displays
9:45am-10:15am

Keynote 2

10:15am – 11:15am

Doing Chemistry by Computer – From the Action of Medicines and Proteins, to Predictions of New Chemistry

Dr David Wilson, La Trobe University

Computers play an ever-increasing role in understanding and predicting chemistry. Since the 1998 Nobel Prize in Chemistry was awarded for computational chemistry, this field has developed rapidly to the stage that in many instances theory is more accurate than experiment. In this talk some of the applications of computers in chemistry will be highlighted, as illustrated by movies of dynamic modeling of drug-protein interactions, the computer-aided design of new medicines and development of modern materials.

Session A

11:30am-12:30pm

A1 Key Concepts in Global Climate Change and Atmospheric Chemistry

Prof David Karoly, The University of Melbourne

This workshop will present a range of data sources and tools for exploring global climate change and atmospheric chemistry, concentrating on the global carbon cycle and stratospheric ozone depletion. It will address common misconceptions, including volcanic sources of carbon dioxide and the occurrence of the ozone hole over Australia.

Suitability: VCE Unit 2

Not repeated

A2 Are You New to VCE Chemistry Units 3&4?

Hayley Bridgwood, Wesley College

Facilitated by an experienced senior VCE and IB Chemistry teacher, this workshop is designed to provide an overview of the major ideas in Units 3&4 VCE Chemistry. Participants will be provided with useful materials to assist in course planning, including suggested timelines and ideas for integrating School Assessed Coursework. There will be opportunity to discuss how to address common student misconceptions and how to help them prepare for the semester examinations. Particularly designed for teachers new to the Units 3&4 VCE Chemistry course, this workshop is intended to help build teacher confidence for the year ahead.

Note: If possible, please bring one/two copies of an Extended Experimental Investigation and Annotated Summary Report for discussion.

Suitability: VCE Units 3&4

Repeated as C2

A3 Interpreting NMR Spectra

Dr Chris Donner, The University of Melbourne

This workshop will describe the basic theory behind NMR spectroscopy and how it can be used to determine chemical structures. Examples of both ^1H and ^{13}C NMR spectra will be shown with discussion on how to interpret NMR spectra presented through a series of exercises.

Suitability: VCE Unit 3

Repeated as B4

A4 The Chemistry of Rocket Science

Peter Razos, Trinity Grammar

Model Rocketry excites and engages students in a way no other activity can do. Participants will be encouraged to build and launch their own model rocket. We will discuss how this resource can be used to engage students in topics such as forces, energy and flight or even used as a science club activity. At a time where we should be engaging more young minds into

science this resource definitely provides an avenue to do so. We will also share online resources and participants can view these at www.dynamicscience.com.au/tester enter as a guest and go to curriculum material to view the resources.

Suitability: All

Not repeated

A5 How to Use ChemCal in Year 11 and 12 Classes

Robert Sanders & Bob Hogendoorn, Chemistry Education Association

This workshop will centre on how to use ChemCal in the classroom and how students can use the system to revise their work. ChemCal consists of four modules, Atomic Structure, Equilibrium, Stoichiometry and Bonding which is accessed online. The modules can be started in any order and give immediate feedback to the students.

Suitability: VCE Units 1-4

Not repeated

A6 IB Chemistry - What is it like?

Lanna Derry, Tintern Schools

The IB is an Internationally recognised course which continues to gain popularity as an alternative to VCE and other Australian Year 11 and 12 courses. While there are many similarities between the teaching of Chemistry in the VCE and the IB, the IB course is quite unique and very interesting to teach. In this session the IB in general and the teaching of IB Chemistry in particular, will be discussed.

Suitability: All

Extension Education

Not repeated

A7 Teaching Units 3&4 Chemistry - CEA / ECCN

Seamus Delaney, Melbourne High School

Louise Lennard, University High School

This session will focus on how you might like to teach Units 3&4 chemistry in 2012. Come along for some useful information on how to set out the year for you and your students. We will discuss how to engage your students with prac work, demonstrations and effective utilisation of ICT, and how to go about writing assessment tasks. This workshop is targeted for first time and early careers chemistry teachers but is suitable for all chemistry teachers. The workshop is being presented by the Early Chemistry Careers Network (ECCN), which is part of the CEA.

Suitability: VCE Units 3&4

Not repeated

A8 How to Increase Numbers in the Physical Sciences

Dr Eroia Barone-Nugent, Santa Maria College

At Santa Maria College we are providing students in Years 10 and Year 11 Chemistry and Physics with authentic science experiences. They work on inquiry based projects with scientists in world leading

laboratories. The goal is to engage students at Year 10 with the importance and relevance of the physical sciences and how they contribute to answering important questions facing society. The program is further elaborated in Years 11 Physics and Chemistry to retain them to Year 12. This program in partnership with the Centre of Excellence for Coherent X-Ray Science has substantially increased student numbers in Physics and Chemistry.
Suitability: All
Not repeated

A9 Discovering Chemistry at Ecolinc
Suzanne Clark & Jacqui Slattery, Ecolinc
Ecolinc is a Department of Education and Early Childhood Development (DEECD) Science Specialist Centre situated in Bacchus Marsh (www.ecolinc.vic.edu.au). Ecolinc offers a range of whole day VCE Chemistry SAC programs. In 2012 Ecolinc will offer a new VCE SAC program for Unit 1 AoS 2 Materials, which will include the use of molecular model kits and 3D interactive computer modelling to explore bonding, and a range of laboratory based nanotechnology applications. This session will overview all of Ecolinc's VCE Chemistry SAC programs including Unit 1 AoS 2 Materials, Unit 2 AoS 1 Water, Unit 2 AoS 2 The Atmosphere and Unit 3 AoS 1 Chemical Analysis.
Suitability: VCE Units 1-3
Extension Education
Repeated as C6

A10 Polymers and Nano-Chemistry
Caitlin Lewis & Sarah Harvey, CSIRO Education
CSIRO Education's Polymers and Nano-Chemistry workshop investigates the properties of materials, the nature of polymer chains and applications of materials chemistry. Test freshly made polyurethane, compare the properties of traditional and recently developed polymers, measure the conductivity of intrinsically conducting polymers, determine the solubility of a biodegradable polymer and explore applications of nanotechnology, including investigating ferrofluids in a magnetic field.
Suitability: VCE Unit 1
Extension Education
Not repeated

A11 Chemistry Experiments for Interactive Whiteboards, Computer Labs and Laptops
Michael O'Brien, Newbyte Educational Software
Wondering how you can use your Interactive Whiteboard effectively in your classroom? Finding good chemistry programs can be difficult. This hands-on workshop will give you some great practical ideas for using this new technology in your chemistry classroom. During the workshop we will examine

several software packages including Acid/Base Titrations, Electrochemical Cells and Enzyme Lab. Receive a FREE evaluation CD and someone will win a full version of one package. Look for our 'Sunflower software for Interactive Whiteboards...' and 'Equilibrium for Interactive Whiteboards...' workshops at this conference.
Suitability: All
Commercial Presentation
Not repeated

A12 Simply NMR and Simply Mass Spec
Marino Dereani, Eutectic Educational
Nuclear Magnetic Resonance spectroscopy and Mass spectrometry are arguably the two principal instrumental techniques used to analyze the structures of organic molecules. These techniques are also included as study items in the VCE Chemistry Unit 3 coursework. Eutectic Educational has over the past few years produced the product series, Simply NMR and Simply Mass Spec., to assist in teaching these techniques and to encourage and support Chemistry education in the use of ICT in the classroom. Each product has been designed for quick and easy access to information on the theoretical aspects and the practical aspects of these techniques at the appropriate academic level of understanding. Both products are made available online (teacher use only) and can also be installed on school networks (teacher and student use). These products come with a proven track record of effectiveness.
Suitability: VCE Unit 3
Commercial Presentation
Repeated as B9

Lunch/Displays
12:30pm - 1:15pm

Session B

1:15pm-2:15pm

B1 Teaching VCE Chemistry Using Digital Resources
John Denmead, Sacre Coeur
This session will give you a snapshot of how I use digital resources to teach VCE Chemistry. Interactive Whiteboard, local and international software, video, flash animations and online assessment tools will all be used. Be the student and sit in on a lesson.
Suitability: VCE Units 1-4
Not repeated

B2 A Brain Based Approach to Teaching Chemistry
Bill Esman, Padua College
The teaching of Chemistry has changed little over the years, but content has changed, our students have changed and most importantly, Neuroscience

has discovered many factors that can improve the quality of the education of our students. I will explain how my teaching now incorporates what has been discovered and how effective it has been for my students.
Suitability: All
Repeated as C3

B3 Looking for a New SAC Task?
Pat O'Shea, Loreto College Ballarat
Are you looking for a new SAC task for Chemistry, or a new prac? This session will offer outlines for many SAC tasks that incorporate accessible materials and experiment design. The tasks are also useful as experiments if not SAC tasks. Topics include construction of simple colorimeters, testing of indicators, identification of sugars, analysis of beach sand, reports on the use of hemp and many other topics.
Suitability: VCE Units 1-4
Not repeated

B4 Interpreting NMR Spectra
Dr Chris Donner, The University of Melbourne
Suitability: VCE Unit 3
Repeat of A3

B5 Pushing the Boundaries with Spreadsheets and Calculators
Assoc Prof Kieran Lim, Deakin University
Numerical calculations are a significant part of chemistry. The use of spreadsheets and calculators is encouraged in both the VCE study design and the (draft) National Curriculum. However, for the most part, while technology has made calculations easier and faster, the calculations themselves are the same as they were in the pre-electronic age. This presentation will discuss innovative uses of spreadsheets and calculators with examples from relative atomic mass, pH, analysis, kinetics, equilibrium, and quantised energy levels (Unit 4, Physics VCE). Some of these may also be suitable as part of the extended experimental investigation.
Suitability: VCE Units 1-4
Repeated as C4

B6 Teaching Units 1&2 Chemistry - CEA / ECCN
Patrick Sanders, Scotch College
Drew Chan, Methodist Ladies' College
This session will focus on how you might like to teach Units 1&2 chemistry in 2012. Come along for some useful information on how to set out the year for you and your students. We will discuss how to engage your students with prac work, demonstrations and effective utilisation of ICT, and how to go about writing assessment tasks. This workshop is targeted for first time and early careers chemistry teachers but is suitable for all chemistry teachers. The workshop is being presented by the Early Chemistry Careers

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Network (ECCN), which is part of the CEA.

Suitability: VCE Units 1&2

Not repeated

B7 Online Chemistry/Science

Peter Razos, Trinity Grammar

Creating the teachable moment day in day out, lesson after lesson can be a difficult task. Let us share the ways in which we engage students in chemistry and use online resources at Trinity Grammar through visual resources, online testing and units of work such as the Science of War, Sports Medicine and Bad Science in Advertising and many more. This is an excellent opportunity to come and see something that can change the way you teach. Participants will be given passwords to create their own self-assessed multiple choice tests. Access the site at www.dynamicscience.com.au/tester enter as a guest and go to curriculum material to view the resources.

Suitability: All

Repeated as C5

B8 Climate Change – New science, Old Arguments

Keith Burrows, AIP Ed Com (Vic)

Since the 2007 IPCC report climate science has progressed a long way, and yet according to some people 'climate science is crap'. How is it that although the science is actually well established the public perception of it seems to be quite the opposite? The answer of course is that it is being badly misrepresented in the media. The purpose of this session is to try to bring you the latest developments in climate science and to give sound science based answers to much of the nonsense that we hear 'out there' in the public arena.

Suitability: All

Extension Education

Repeated as C7

B9 Simply NMR and Simply Mass Spec

Marino Dereani, Eutectic Educational

Suitability: VCE Unit 3

Commercial Presentation

Repeat of A12

B10 Equilibrium for Interactive Whiteboards, Computer Labs and Laptops

Michael O'Brien, Newbyte Educational Software

Interactive Whiteboards and student personal computers are a trend in education, however finding good chemistry programs and using them effectively is a problem. This hands-on workshop will give you some great practical ideas for using this new technology in your chemistry classroom. During the workshop we will examine several software packages including Gas Equilibrium, Haber Process and Sulfuric Acid Production. Receive a FREE evaluation

CD and someone will win a full version of one package. Look for our 'Sunflower software for Interactive Whiteboards...' and 'Chemistry Experiments for Interactive Whiteboards...' workshops at this conference.

Suitability: All

Commercial Presentation

Not repeated

B11 StudyON for VCE Chemistry: Want to Improve Your Students' Exam Results?

Neale Taylor, John Wiley and Sons Pty Ltd

In this hands-on workshop you will explore StudyON for VCE Chemistry Units 3&4 and our new StudyON Teacher Edition. StudyON is Jacaranda's online study, revision and exam practice tool which lets you:

Track the progress of your students throughout the year at an individual, group or class level.

View each student's online performance on actual past VCAA exam and practice questions.

StudyON incorporates videos, animations, interactive study activities and a results tracker. You will receive complementary packs of studyON Chemistry 3 and full access to StudyON Teacher Edition for 12 months.

Suitability: VCE Unit 3&4

Commercial Presentation

Repeated as C9

VCAA Update

2:15pm – 3:00pm

National Curriculum – A Victorian Perspective

Maria James, Victorian Curriculum Assessment Authority (VCAA)

What is happening with the national curriculum in science, and what are the implications for implementation in Victoria for Years Prep to 12? This presentation will outline the latest national curriculum developments for primary and secondary years of schooling, including progress in the development of national senior science courses. Time will be scheduled to address questions from the audience.

Session C

3:15pm – 4:15pm

C1 Meet the Assessors

Chris Dwyer

Chris Dwyer will discuss the VCAA Assessor's reports for the 2011 Unit 3 and 2010 Unit 4 examinations.

Suitable for: All

Limit: No Limit

Not repeated

C2 Are You New to VCE Chemistry Units 3&4?

Hayley Bridgwood, Wesley College

Suitability: VCE Units 3&4

Repeat of A2

C3 A Brain Based Approach to Teaching Chemistry

Bill Esman, Padua College

Suitability: All

Repeat of B2

C4 Pushing the Boundaries with Spreadsheets and Calculators

Assoc Prof Kieran Lim, Deakin University

Suitability: VCE Units 1-4

Repeat of B5

C5 Online Chemistry/Science

Peter Razos, Trinity Grammar

Suitability: All

Repeat of B7

C6 Discovering Chemistry at Ecolinc

Suzanne Clark & Jacqui Slattery, Ecolinc

Suitability: VCE Units 1-3

Extension Education

Repeat of A9

C7 Climate Change – New science, Old Arguments

Keith Burrows, AIP Ed Com (Vic)

Suitability: All

Extension Education

Repeat of B8

C8 Sunflower Software for Interactive Whiteboards, Computer Labs and Laptops

Michael O'Brien, Newbyte Educational Software

Interactive Whiteboards and student personal computers are a trend in education, however finding good chemistry programs and using them effectively is a problem. This hands-on workshop will give you some great practical ideas for using this new technology in your chemistry classroom. During the workshop we will examine several software packages including Sunflower and Roger Frost chemistry programs. Receive a FREE evaluation CD and someone will win a full version of one package. Look for our 'Equilibrium for Interactive Whiteboards...' and 'Chemistry Experiments for Interactive Whiteboards...' workshops at this conference.

Suitability: Years 7-10

Commercial Presentation

Not repeated

C9 StudyON for VCE Chemistry: Want to Improve Your Students' Exam Results?

Neale Taylor, John Wiley and Sons Pty Ltd

Suitability: VCE Unit 3&4

Commercial Presentation

Repeat of B11

Wine & Cheese (provided by CEA) 4:15pm – 4:45pm