



## Chemistry Down Under

**Dietmar Kennepohl**  
Athabasca University and  
University of Otago

You may have wondered why in the world I turned down the chance to be C<sub>3</sub> News Editor for one more year. I do have a good excuse: I'm spending the year in New Zealand on sabbatical from my job at Athabasca University.

I am doing hands-on laboratory work at the University of Otago in Dunedin, New Zealand. My research involves the synthesis and characterization of novel compounds. The compounds synthesized by us can be used to model analogous compounds found in nature but which either

cannot be readily isolated or which have unusual electronic properties. The class of compounds that we are interested in are coordination compounds containing transition metal(s) at their centre, chelated by a large macrocyclic ligand. These compounds are very similar to metalloenzymes and are often involved in important catalytic reactions found in nature. One branch of this work has serendipitously led towards related grid compounds that possess exciting magnetic behaviour. Research on these magnetically exciting compounds may lead to the development of useful nanocomponents (switches/memory devices).

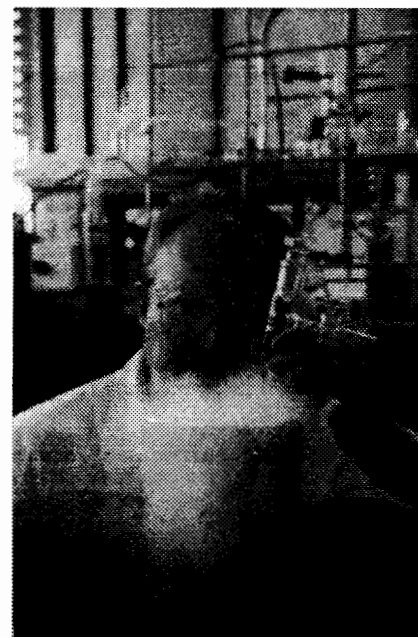
Besides long days in the lab, I am experiencing a little of New Zealand society and culture. With my wife Roberta and our ten-month-old daughter Inka, I have made some trips to see parts of the South Island and Stewart Island (which has more kiwi birds than it has people). Highlights to date have included a few days in the resort town of Queenstown (about six weeks before it suffered the worst flood in 120 years, leaving half its main street businesses under two meters of water), a four-day hike on the Milford Track (ancient rain forest), and visiting 18 wineries (research is not just for the lab!).

In my non-traveling time, I have become addicted to scones served regularly in the department at morning tea (civilized), have become quite used to taking a two-litre plastic bottle into the liquor store to have it filled with beer (more civilized), and learned how to drive on the left side of the road (apparently required here). I've even been to a rugby game (go Otago!).

For some pictures of my work and our life in New Zealand, along with a handy glossary of strange Kiwi terms, check out my web site (till June 2000) at: <http://neon.otago.ac.nz/chemistry/research/dietmar/diet.htm>.



Christmas in the Southern hemisphere.



A cold one in the lab.

**Special conference Pull-Out Section in this issue**

**Includes conference details, 2<sup>nd</sup> call for papers, and registration form**

## C<sub>3</sub> NEWS

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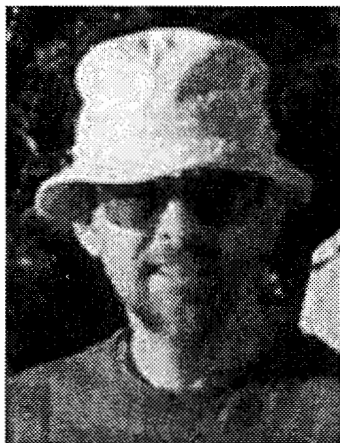
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## President's Report by Bob Perkins

As I sit here typing it is difficult to believe that the spring semester is nearly half over. I'm just putting the finishing touches to my second-year organic midterm exam for tomorrow.

The plans for the Kamloops conference are also progressing; check out this issue for more details. Now is the time to start making your plans and applying for PD funds at your institutions. You should let Doug and Norm know as soon as possible if you will make the trip to Kamloops to help them with their planning.

The other big news for this issue is that as a result of some successful lobbying by Geoff Rayner-Canham and myself over the past year, we have finally got official word that members in good standing of College Chemistry Canada will now also be eligible to become Affiliate Members of the Chemical Education Division of the Chemical Society of Canada. In addition to receiving the Education issue of Canadian Chemical News (usually the March issue), Affiliate Members will also be able to attend the annual CIC conference at a reduced rate. The actual rate is to be set by each organizing committee, but I believe that this represents a great opportunity for more cooperation between the two organizations. The CSC conference this year is in Calgary, just before our C<sub>3</sub> conference at the University College of the Cariboo in Kamloops, BC.

If you would like to take advantage of this, be certain to include \$10 for this option, in addition to the regular \$20 membership for C<sub>3</sub>. We will forward one cheque to the CIC along with a list of the names and addresses for those individuals interested. Discussions are continuing with regards to some sort of joint effort between the CIC and C<sub>3</sub> for 2001 in Montreal. If you have any questions, please give me a call or send me an e-mail message.

Until next time, have fun in the classroom with your students.

Bob Perkins.

### SPECIAL PULL-OUT SECTION 27<sup>TH</sup> C<sub>3</sub> CONFERENCE

1 JUNE - 4 JUNE 2000, KAMLOOPS, BC

FOCUS ON: CHEMISTRY AND WATER QUALITY

CHECK: <http://www.cariboo.bc.ca/schs/chem/c3conf/c3conf.htm>

## **An Introduction to C<sub>3</sub>**

**Patrick Duffy, Kwantlen University College**

Every issue of the C<sub>3</sub> (College Chemistry Canada) newsletter is mailed to over one hundred post-secondary institutions around the country. For many instructors, both new and returning, this may be all that they see of the C<sub>3</sub> organization; C<sub>3</sub> keeps a low profile. The problem is that, because of its low profile, it is difficult to find a ready source of information about the organization outside of the newsletter. One might wonder, perhaps, what it is that C<sub>3</sub> does in addition to publishing the newsletter, or you might be curious about the history of C<sub>3</sub>. I found myself pondering these questions (among a few others) one day, and so decided to find answers to them. This article is the end result of my efforts. I am grateful to Bob Perkins, the current C<sub>3</sub> president, for his answers. Any errors of fact are certainly my own doing and not his.

### **What is C<sub>3</sub>?**

In the broadest of brushstrokes, C<sub>3</sub> is a non-profit affiliation of college chemistry instructors in Canada. Leaving it at that, though, is akin to saying that Canada is a country in which people live. I gained more insight into the organization by asking the specific questions posed below.

### **When and Why Did It Start?**

In the late 1960s, there was no Internet. There was no E-Mail. Access to long-distance communication was limited (primarily for budgetary reasons). Because of this, chemistry instructors teaching in smaller communities (many colleges in Canada fall into this category) had very little opportunity to talk to their counterparts in other institutions. A common desire for this interaction led people in eastern Canada to form the C<sub>3</sub> in 1970 as a subgroup of its American counterpart, the 2YC<sub>3</sub>. Membership, especially in eastern Canada (where C<sub>3</sub> was formed) grew and, in 1972, C<sub>3</sub> became an organization independent of 2YC<sub>3</sub>. The two organizations, however, have maintained close ties throughout the years, sometimes organizing joint conferences.

### **Who Joins and Why?**

Originally, people joined primarily to associate with people outside their own college for the mutual exchange of ideas, both in teaching and in research. The C<sub>3</sub> newsletter and, to a greater extent, the annual conference provided a much-needed venue for this interaction. Others joined out of a desire for a sense of belonging to a larger community of like-minded professionals.

As C<sub>3</sub> grew, news of its existence reached a second generation of people (Bob Perkins among them). Many, like Bob joined after being brought to a conference and witnessing for themselves the exchange of ideas and long-term fellowship clearly present. Others, in search of employment, joined to gain access to the network that C<sub>3</sub> provided. Still others joined just for the sheer fun of the conferences. It is this group of people that makes the approximately 150 members of C<sub>3</sub> today.

### **What Does C<sub>3</sub> Do?**

As mentioned in the introduction, the primary front of C<sub>3</sub> is its quarterly newsletter. Anyone who reads the newsletter also hears about the annual conferences. However, C<sub>3</sub> does not end its activities there; your \$20 membership fee also sponsors two \$400 scholarships, a \$600 instruction award, and helps to underwrite the cost of holding the conference should sufficient corporate sponsorship be unavailable. In addition, C<sub>3</sub> also organized professional development activities for the BC articulation meeting in 1999.

### **What Do You Get Out of C<sub>3</sub>?**

What you get out of C<sub>3</sub> depends a great deal on what you put into C<sub>3</sub>. If you choose, you may limit your activities to reading the newsletter. If you wish to get more involved, you can attend the annual conferences (which alternate yearly between eastern and western Canada), and even give a talk or present a poster. If you wish to participate more actively, you could stand for office.

One of the easiest ways to increase your involvement is to write a short article for the newsletter ([Fr]ed: like this one,

for example). Did you do something effective or different in class that you would like to tell others about? Do you have an idea for a lab or a lecture that you think others would like to know about and benefit from? All it takes is a few short paragraphs sent to the editors and you're done. Remember: the exchange of ideas between chemical educators forms the core of C<sub>3</sub>, and this occurs most effectively only when individual members offer the ideas to exchange. In fact, Bob feels that C<sub>3</sub> has helped him to become a better instructor primarily because of this exchange of ideas.

### In Conclusion...

I hope that this article has answered a few of the questions that may have been lingering in the back of your mind about C<sub>3</sub>. I know that writing it has certainly helped me, at least. For those of you in the reading audience who may not be members, you may learn more than what's written here by taking the questions posed in this article and asking them of another C<sub>3</sub> member near you. If Bob is correct, you'll get a different answer from every person you ask.

## Using MS-Excel to Track Student Marks

### Patrick Duffy, Kwantlen University College

Many of you (I'm sure) use Microsoft Excel to track student marks. I do, and up until recently (ironically enough at an Access workshop) I did not know how to use it to automatically assign student grades as easily as it calculates percentages. Using Excel to do this would have several advantages, not the least of which being that I would have a tool that would automatically assign grades that conformed rigidly to the Kwantlen standard. Of course, they might not be the final grade I'd assign, but it would at least give me a sound starting point from which to work.

I should say at this point that the method presented here works in Excel 9x, and Excel 2000. I do not know if it will work in other (older) versions, so if you're using one of them, try it and let me know.

The central part of the process is the vlookup command. Its format is:

`=vlookup([value],[array],[column number])`

The parameters inside the brackets are:

- [value]*: The mark to which you wish to assign a grade. Percentages usually work best, as will be shown later.
- [array]*: A set of cells which relates marks to grades and/or grade points. For Kwantlen, this might look something like:

	A	B	C
1	Percent	Grade Point	Grade
2	0	0	F
3	50	1	D
4	56	1.67	C-
5	60	2	C
6	64	2.33	C+
7	68	2.67	B-
8	72	3	B
9	76	3.33	B+
10	80	3.67	A-
11	85	4	A
12	90	4.33	A+

Of course you don't have to put this in the top right hand corner of your spreadsheet; I have mine tucked out of the way on the far right side. You *do*, however, have to have it in ascending order or, apparently, it doesn't work. (I haven't tempted fate myself by trying it.)

[number]: The number of the column from which you wish to extract information. For example, specifying "2" (without the quotes) would extract grade point marks from the set above.

To demonstrate how all this works, here's an example:

Suppose you had a student who had 58.7 percent overall and you wanted to assign him/her a mark. You would call vlookup as follows: `=vlookup(58.7, A2:C12, 3)`

vlookup would then return the highest letter grade *less* than the specified percentage — "C—" in this case. Similar calls with percentages of 59.9, 56.0, and 59.999 would all also return a "C-." (You can see now why these calculated marks should only be used as guidelines — 59.999 would almost always be rounded up to a "C.")

The problem with all of this comes when there are restrictions placed on grades, as there are in chemistry. At Kwantlen, for example, you have to obtain a mark of 65 percent in the lab component of the course to obtain a final grade of "A—" or better. We can take this into account fairly easily using vlookup again, with a table that looks something like:

	A	B	C
1	Percent	Grade Point	Grade
2	0	1.67	C-
3	50	2.33	C+
4	60	3.33	B+
5	65	4.33	A+

Then we could pass vlookup the percentages. This time, though, vlookup would return slightly different information: The maximum *allowable* grade given the lab percentage. Similar things can be done with the final exam grade restrictions.

You could (and I do) automate (and simplify) this whole process still further by having vlookup return the grade points instead of the marks themselves. You might then have three columns that have in them:

	A	B	C
1	Max. from Percentage	Max. from Labs	Max. from Final
2	2.33	1.67	2.00

The lowest grade point of all of these would then be the one that you would (as a start) assign:

`=min(A2, B2, C2)` would pick it out for you (1.67, of course).

If you wanted to convert this to a letter, you could use:

`=vlookup(1.67, B2:C12, 2)`

to pick up the letter grade corresponding to the grade point.

All of this requires a lot of typing and a lot of testing. If you'd like to use vlookup to assign your grades but don't have the time to type it in and debug it, contact me and I'll send you a copy of mine.

### ONLINE ?

VISIT THE C<sub>3</sub> WEB SITE AT [www.c3.douglas.bc.ca](http://www.c3.douglas.bc.ca)  
FOR MORE INFORMATION AND ARCHIVES.

### E-MAIL-DELIVERY?

IF YOU WOULD LIKE TO RECEIVE YOUR COPY OF THE C<sub>3</sub>  
NEWS VIA E-MAIL, PLEASE SEND AN E-MAIL TO:

[patrick@kwantlen.bc.ca](mailto:patrick@kwantlen.bc.ca)

WITH THE SUBJECT LINE:

ELECTRONIC C<sub>3</sub> NEWS

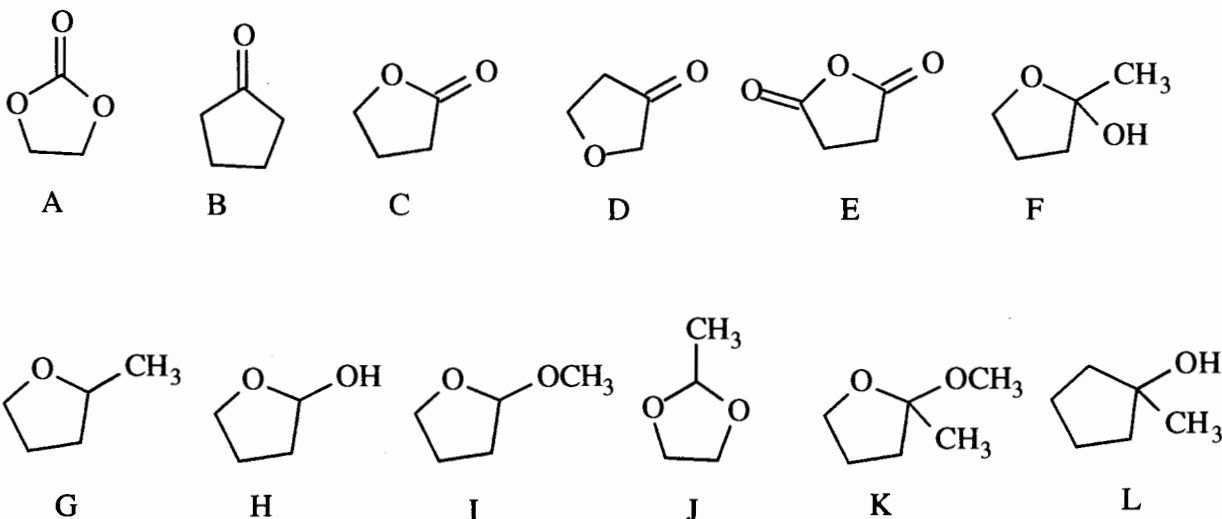
# The Wonderful World of Rings

## Bob Perkins, Kwantlen University College

As a result of additional requests for stuff from my bag of teaching tricks, I offer the following open-ended exercise for second year organic chemistry students.

Over the years I am certain that you have heard many students indicate that they were certain that the chemistry of carbonyl and acyl compounds made perfect sense. The problem was that when they were asked to provide the answer to a problem involving a cyclic compound, they couldn't transfer their understanding of acyclic compounds to the cyclic ones. I have used the following exercise for several years now, and found that it has helped many students to sharpen their problem-solving skills.

The first part of the exercise involves having the students identify the functional group present in each of the 12 molecules shown below. I have found that most of the difficulty in predicting the outcome of an organic reaction can be traced back to the inability of a student to recognize the type of functional group present.



Once the students have successfully identified the functional groups, they can then move on to practice reactions of nucleophiles. There are many variations possible, so I will list only a few of them.

- \* Which compounds would not react with  $\text{CH}_3\text{MgBr}$  ?
- \* Which compounds would react with  $\text{CH}_3\text{MgBr}$  to produce  $\text{CH}_4$  ?
- \* Provide the structure of the products formed from the reaction of compounds A, B, C and D with  $\text{LiAlH}_4$  (after an acidic workup).
- \* Provide the structure of the products formed from the reaction of compounds A, B, C and D with  $\text{CH}_3\text{CH}_2\text{MgBr}$  (after an acidic workup).
- \* Which compounds would undergo mutarotation ?
- \* Provide the structure of the products formed from the reaction of compounds A, B, C, D and E with  $\text{CH}_3\text{NH}_2$ .
- \* Provide the structure of the products formed from the reaction of compounds E, I, J and K with  $\text{H}_3\text{O}^+$  and heat.
- \* Provide the structure of the products formed from the reaction of compounds C, E, F and H with acidic  $\text{CH}_3\text{OH}$  solution.

Feel free to add any other variations that come to mind. I would be interested in any feedback if you do use the exercise with your students.

### RENEWALS

IF YOU WOULD LIKE TO CONTINUE RECEIVING C<sub>3</sub> NEWS, PLEASE REMEMBER TO RENEW YOUR ANNUAL MEMBERSHIP. FORWARD A \$20 CHEQUE MADE PAYABLE TO "COLLEGE CHEMISTRY CANADA" TO THE TREASURER, JACKY MCGUIRE.

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# C<sub>3</sub> News



Newsletter of College Chemistry Canada/La Chemie Collégiale au Canada

## ***INSIDE THIS ISSUE***

Chemistry Down Under.....	1
President's Report.....	2
An Introduction to C <sub>3</sub> .....	3
Using MS-Excel to Track Student Marks.....	4
The Wonderful World of Rings.....	6

**See our special conference  
Pull-Out Section in this issue**

**Includes conference details, 2<sup>nd</sup> call  
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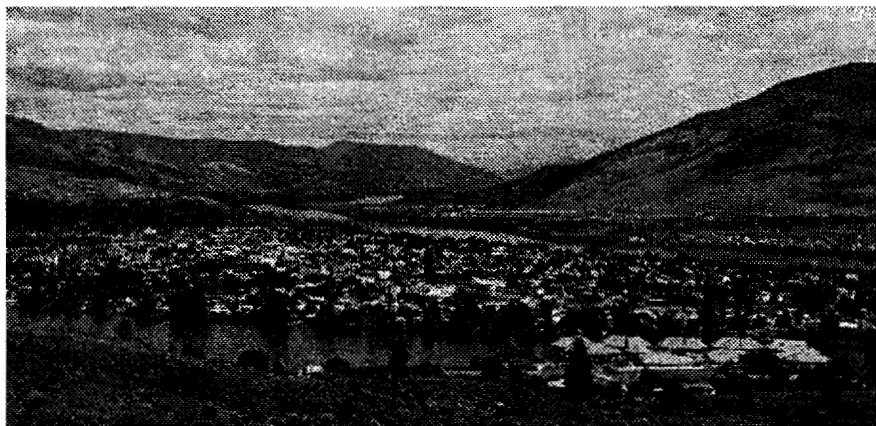
**27<sup>th</sup> College Chemistry Canada Conference**  
**University College of the Cariboo, Kamloops, BC**  
**June 1 – 4, 2000**  
**Chemistry and Water Quality**

**Conference website:** <http://www.cariboo.bc.ca/schs/chem/c3conf/c3conf.htm>

The University College of the Cariboo (UCC) Organizing Committee invites you to visit us in Kamloops, BC, situated in the scenic Thompson River Valley, for an exciting, diverse and relevant C<sub>3</sub> Chemistry conference. UCC offers a Canadian Society for Chemistry accredited B.Sc. Degree with a Major in Chemistry and a Major in Environmental Chemistry; both Majors are available with a co-op option.

UCC overlooks the city on a 100-hectare campus featuring grassy lawns, shady trees, and gardens, in addition to nature trails on naturally wooded slopes. UCC is within

walking distance of many motels, shops, restaurants and entertainment. Plenty of time is allowed for you to explore the city, hike the surrounding hills and fish our famous lakes.



The Kamloops river valley scenery, Kamloops is located at the junction of the North and South Thompson Rivers — a great natural vacation spot.

### Registration Fees:

The following registration fees (in \$CDN) include a 1-year C<sub>3</sub> membership fee of \$20. Registration fees include the Conference Reception, coffee breaks, and lunches. There is a separate fee for the Conference Banquet.

Before/On May 1:	\$70
After May 1:	\$90
Conference Banquet:	\$25

A special Saturday-only registration fee of \$15 is available to High School Chemistry teachers as is a special one-day attendance fee of \$25.

Registration fees may be paid by credit card, cheque, or money order. Please complete the Registration Form and make all cheques payable to the 27<sup>th</sup> College Chemistry Canada Conference and send to: Doug Bickley, Dept. of Chemistry, University College of the Cariboo, Box 3010, Kamloops, BC, V2C 5N3.



The registration desk will be located in the UCC Science Building, home to the chemistry department.

Registration fees may be paid by credit card, cheque, or money order. Please complete the Registration Form and make all cheques payable to the 27<sup>th</sup> College Chemistry Canada Conference and send to: Doug Bickley, Dept. of Chemistry, University College of the Cariboo, Box 3010, Kamloops, BC, V2C 5N3.

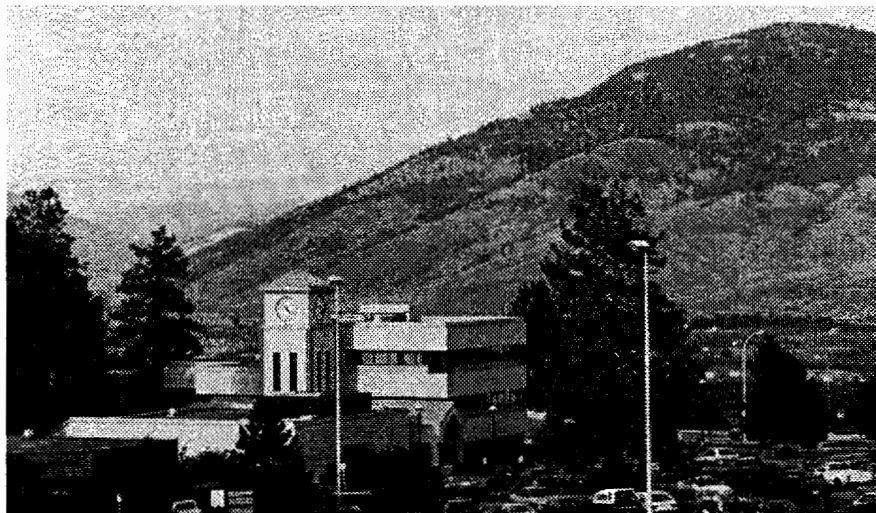
### Conference Format:

Conference talks are divided into 30-min and 15-min blocks, together with a poster session. The 15-minute blocks are scheduled near the end of the morning and afternoon sessions and are intended for teaching tips, favourite demonstrations, etc.

## Call For Papers:

Several 15-minute and 30-minute blocks are available for presenters. We hope you will consider making a presentation at our conference, either around the conference theme or on any aspect of teaching chemistry. Please indicate the format of presentation to the Program Chair, Norm Reed, when submitting a paper. For more detailed information about titles and abstracts, contact the Program Chair, Norm Reed, or check details on our conference web site.

Standard facilities for presentation include blackboards, overhead projectors and slide projectors. Computer projection equipment is available; please notify the Program Chair of your specific needs. Poster space will be approximately 4' x 8' and adhesive putty will be supplied (no pins or tape are to be used).



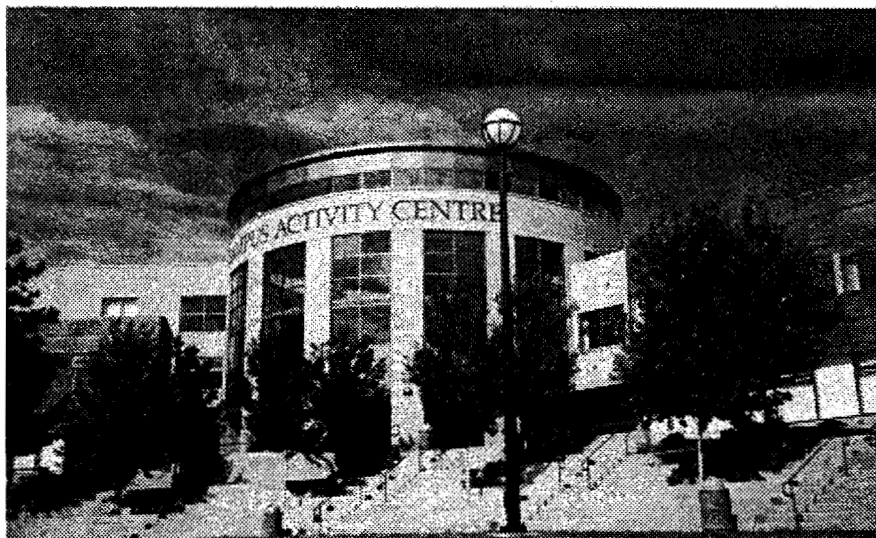
The Clock Tower Building, the location of presentations, is in the central part of the UCC campus, with the local scenery providing the backdrop.

## Poster Session:

In order to provide maximum flexibility in presentation styles, a Poster Session is also scheduled for Friday, June 2, from 4:00-6:00 pm in The Grand Hall of the UCC Campus Activity Centre, immediately preceding the Conference Banquet.

## Workshops:

In addition, two workshops are being organized for Saturday, June 3, from 2:00-4:00 pm in the Science Building: *My Favourite Demos* will provide an opportunity for presenters to actually do their demonstration (details of reagents and equipment must be supplied well in advance) while *Computers and Chemistry* will highlight web-based modeling (e.g. using Chime).



The UCC Campus Activity Centre, location of the reception on Thursday night and the poster session and banquet on Friday night.

## Plenary Lectures:

There are also three 60-min plenary lectures planned. Two of the confirmed speakers are:

**Professor Kristin J. Orians:** Departments of Chemistry and Oceanography, University of BC, Vancouver, BC.

**Dr. Sergio Vitomir:** Napier International Technologies Inc., Langley, BC.

## 30-minute presentations currently scheduled:

**Marni Gillis:** Water Quality officer, City of Kamloops.

**Stacey Jyrkkanen:** Neste Resins, Kamloops.

**Norm Reed:** Department of Chemistry, UCC, Kamloops.

**Social Activities:**

- Thursday, June 1: 7:00–10:00 pm Conference Reception: The Terrace, UCC Campus Activity Center  
Registration tickets are required. A cash bar will be provided.
- Friday, June 2: 6:30 pm Conference Banquet: The Grand Hall, UCC Campus Activity center  
\$25 per person
- Saturday, June 3: 7:00 am Fun Run  
afternoon or evening: Bear Brewing Co. tour (tentative)
- Sunday, June 4: Several tours are in the planning stage and we would appreciate your comments or suggestions. There will be additional costs for all of these.
- Tour 1: Lac du Bois Grasslands
  - Tour 2: Whitewater rafting expedition
  - Tour 3: Wells Gray Provincial Park
  - Tour 4: Explore the Kamloops Wildlife Park

Exhibits by conference sponsors will be available at various times during the conference.

**Accommodations:**

A list of motels/hotels close to UCC (and their phone/fax numbers) is available at the conference web site in order for you to arrange your accommodations.

Space in the UCC residences (McGill On-Campus Housing) has been reserved for conference attendees. Rooms are arranged in a quad design, with four rooms having common amenities. Applications are available from McGill Student Housing. The special rate of \$20/day may be obtained by mentioning the “27<sup>th</sup> College Chemistry Canada Conference”. This rate does not include towels. Linen service for your stay is available for an extra \$8. Payment must be made in advance by credit card. Contact McGill On-Campus Housing for more information by phone (1-250-372-7778), FAX (1-250-372-2757) or e-mail: [mcgillhousing@telus.net](mailto:mcgillhousing@telus.net).

**UCC Contact People**

Should you require more information about the conference, please contact:

**Conference Chair:** Doug Bickley; Phone: (250) 828-5455;  
e-mail: [dbickley@cariboo.bc.ca](mailto:dbickley@cariboo.bc.ca).

**Program Chair:** Norm Reed; Phone: (250) 828-5451;  
e-mail: [nreed@cariboo.bc.ca](mailto:nreed@cariboo.bc.ca).

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*explore  
hike  
fish*

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*grassy lawns, shady  
trees, and gardens*

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*nature trails*

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*naturally wooded  
slopes*

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**27<sup>th</sup> College Chemistry Canada Conference**  
**University College of the Cariboo, Kamloops, BC**

**June 1 – 4, 2000**

**Chemistry and Water Quality**

**Registration Form**

Name: \_\_\_\_\_

Institutional affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

e-mail: \_\_\_\_\_

Telephone: (h) \_\_\_\_\_ (w) \_\_\_\_\_ Fax: \_\_\_\_\_

Paper Title: \_\_\_\_\_

I wish to present the paper: \_\_\_\_\_ in a 30 minute block \_\_\_\_\_ in a 15 minute block \_\_\_\_\_ in the poster session

**Basic Registration Fee:** includes opening reception, coffee breaks and lunches.

\_\_\_\_\_ \$ 70.00 before/on May 1 (includes 1-year C<sub>3</sub> membership fee of \$20)

\_\_\_\_\_ \$ 90.00 after May 1 (includes 1-year C<sub>3</sub> membership fee of \$20)

\_\_\_\_\_ \$ 25.00 one day only (does *not* include C<sub>3</sub> membership fee)

\_\_\_\_\_ \$ 15.00 Saturday only for High School Chemistry teachers

\_\_\_\_\_ \$ 20.00 C<sub>3</sub> membership (for those attending for one day who wish to join C<sub>3</sub>)

\_\_\_\_\_ I wish to attend the conference banquet \$25.00

\_\_\_\_\_ I will be bringing \_\_\_\_\_ additional banquet guests (\_\_\_\_\_ X \$25.00)

**Total \$** \_\_\_\_\_ (includes GST)

Cheque:  VISA:  VISA #: \_\_\_\_\_ Expiry: \_\_\_\_\_

MasterCard:  MasterCard #: \_\_\_\_\_ Expiry: \_\_\_\_\_

Numerous social activities are under consideration for Saturday and Sunday. Please indicate your interest in any of the following with a checkmark. Please note that there will be additional costs for some activities.

- I would be interested in a Lac du Bois Grasslands tour (Tour 1)
- I would be interested in a White Water Rafting Expedition (Tour 2)
- I would be interested in Wells Gray Provincial Park tour (Tour 3)
- I would be interested in exploring the Kamloops Wildlife Park (Tour 4)
- I would be interested in a tour of Bear Brewing, Kamloops's local Microbrewery (no additional cost)

Please make cheques payable to: **The 27<sup>th</sup> College Chemistry Canada Conference** and mail them with the registration forms to:

**Doug Bickley**

**Chemistry, The University College of the Cariboo**

**P.O. Box 3010, Kamloops, BC, V2C 5N3**

**Telephone: (250) 828-5455 Fax: (250) 828-5450 e-mail: [dbickley@cariboo.bc.ca](mailto:dbickley@cariboo.bc.ca)**

A number of rooms has been reserved for conference participants arriving on June 1 and departing on June 4 at Student Residences. Please contact McGill Student Housing directly and mention the "27<sup>th</sup> College Chemistry Canada Conference" in order to receive the conference rate of \$20.00/day. 850 McGill Road, Tel: 1-250-372-7778 FAX: 1-250-372-2757. e-mail: [mcgillhousing@telus.net](mailto:mcgillhousing@telus.net)