



CANADIAN CHEMISTRY AND PHYSICS OLYMPIADS

2006/07 NEWSLETTER

www.ccpo-occp.ca

An Invitation

Founded in 1985, the Canadian Chemistry and Physics Olympiads (CCPO) seeks to foster a wider appreciation of chemistry and physics as careers for talented young Canadian students at the pre-university level, as well as to promote improved teaching standards in both disciplines. To this end, Canada has joined the group of some 85 countries where gifted students are identified and prepared to compete in the International Chemistry and Physics Olympiads.

The Canadian Olympiads have grown rapidly in scope and reputation. Over one hundred medals, including eleven gold and twenty-four silver, have been won by our delegations at these International Olympiads.

We are also proud of the large number of students we have attracted to our chemistry and physics regional preparation programmes and exams. This newsletter provides information about these and about our major event each year, the National Finals, where the two teams that will represent Canada at the International Olympiads are selected. A unique opportunity to travel and meet fellow students from a wide background but similar interests, competing in the Finals or an International Olympiad is a tremendous experience.

The cooperation of science teachers across the country is vital to the CCPO's work, as they are best placed to identify and encourage promising students. Therefore, we urge the heads of science departments to make this newsletter available to science teachers and students in their school so that they can get in touch with our organizers and exam coordinators.

We thank all the institutions and corporations listed below who recognise the value and relevance of our mandate with their generous support. Most schools whose students competed in the 2006 Finals also made a small but valuable financial contribution to help us defray room-and-board costs. They are listed on our web site. In partnership with our dedicated band of volunteers, these sponsors and donors have made it all possible.

Since his election on December 1st, 2005, Dr. Stanislaw Skonieczny has been the National Director and Secretary-Treasurer of the CCPO. During the first year of his tenure as Director of the CCPO, collectively, the Canadian Olympiad teams performed the best ever in CCPO history. We are delighted by the 2006 Olympiad results and are looking forward to another exciting and successful year in 2007.

Regional Programmes

1. Western Physics Olympiad

(www.physics.ubc.ca/outreach/ipho)

During the school year, a committee based at the University of British Columbia or at the University of Alberta provides participating high-school students, mainly from British Columbia and Alberta, with sets of interesting physics problems posted on the internet, many of which go beyond the school curriculum. In March an invitational exam is posted and students submit their responses by mail or fax. About 15 are invited to the Western Physics Olympiad Camp for a weekend of training and selection.

Contact: **Prof. C. Waltham**, Western Physics Olympiad Programme, Dept. of Physics, University of British Columbia, BC V6T 1Z1. E-mail: cew@phas.ubc.ca.

Contact: **Prof. A. Kotlicki**, Same department address as above. E-mail: kotlicki@physics.ubc.ca.

2. Physics Olympiad Programme in Toronto

(www.physics.utoronto.ca/~poptor/)

The Department of Physics at the University of Toronto runs a nine-month preparation programme for high-school students in Ontario. Known as (POPTOR), it helps students to prepare for the national competitions and provides them with an excellent opportunity to broaden their exposure to physics. The first stage consists of six graded problem sets posted on the web during the year. The 20 top students are invited, all expenses paid, to a training/selection weekend at the University of Toronto. In 2007, this will be held from **May 19 to 21**.

Contact: **Dr. N. Krasnopolskaia**, Physics Olympiad Programme, Dept. of Physics, University of Toronto, 60 St. George St., Toronto, ON M5S 1A7.

E-mail: poptor@physics.utoronto.ca.

3. Ontario Chemistry Olympiad

(www.chem.utoronto.ca/ICHO.Ontario)

The Department of Chemistry at the University of Toronto makes available to all Ontario high-school students a chemistry preparation programme via the Internet. Some 20 students are then invited to a training/selection weekend at the University of Toronto, at the same time as the POPTOR weekend (**May 19 to 21** in 2007).

Contact: **Dr. C. S. Browing**, Chemistry Olympiad Programme, Department of Chemistry, University of Toronto, 80 St. George St., Toronto, ON M5S 3H6.

E-mail: provolym@chem.utoronto.ca

Sponsors: University of Toronto, The Natural Sciences and Engineering Research Council, Merck Frosst Canada, The Perimeter Institute for Theoretical Physics, AstraZeneca R&D, Imperial Oil Foundation.

Supported by: Boehringer Ingelheim (Canada) Ltd., Dow Chemical, McLean Foundation, Recochem Inc., John Wiley & Sons Canada, Thomson Nelson, Chemical Institute of Canada, University of British Columbia, Champlain/Lennoxville Regional College, Ontario Ministry of Education.

Selection Examinations in 2007

Pre-university students of any age may participate. While senior students will generally be more successful, more junior students are welcome to compete and gain valuable experience. To be eligible for the National Olympiad Finals (see below), students must write one of the following examinations:

1. The Canadian Association of Physicists High School Prize Examination

The CAP exam is prepared in cooperation with the Canadian Physics Olympiad programme. One of its purposes is to screen students for invitation to the National Physics Olympiad Finals. All high schools and CEGEPs in Canada are notified of this exam by the CAP in the spring of each year. It is fully bilingual and will be held sometime in April.

More information on the CAP Exam can be found at www.cap.ca/edu/hsprzex.html. In particular, a list is given of provincial Exam Coordinators with their e-mail addresses. Interested schools (and students) should contact these persons if they have not received an invitation from them by mid-March.

All previous exams and their solutions since 1994 are posted, in English and in French, at:

www.physics.ubc.ca/outreach/CAPexams/cap_home.htm.

2. The Chemical Institute of Canada's National High School Chemistry Examination

The CIC and the Canadian Olympiads coordinate their efforts to make the CIC exam the principal screening mechanism for the National Chemistry Olympiad Finals. The format of the exam allows students to compete for CIC prize standing and/or be competitive for the Olympiad program. All high schools in Canada are notified by the CIC in the spring of each year.

Also, since the Ordre des Chimistes du Québec Examination is no longer offered, the exam will now be made available to CEGEP students in Quebec. Only CEGEP 1 students will be eligible for CIC prizes, but all CEGEP students can compete for selection to the National Chemistry Olympiad Final on the basis of this examination.

This fully bilingual examination is held next on **April 24, 2007**.

For more information, as well as for copies of all previous exams since 1995, please visit the following site:

www.chemistry.ca/outreach/hsexam/cicfrm_index__e.htm.

The site has a list of regional coordinators for the Exam.

National Olympiad Finals

On the basis of the results of the CAP Prize Exam and of the Physics Olympiad Selection Exam written at the Western and Toronto physics training weekends, and in consultation with the heads of the training programmes, about 15 students are invited to a week-long National Olympiad Final (NOF), usually in Ontario or Quebec at the end of May.

On the recommendation of the CCPO Chemistry Committee, based on the results of the CIC exams and the Ontario Chemistry Olympiad, 15 chemistry students are also invited to the NOF. The CCPO arranges and pays for travel and room-and-board; sponsors (J. Wiley and Thomson Nelson) supply complimentary textbook material for all participants.

Eligible students must be under 20 years of age at the time of the International Olympiads that immediately follow the NOF. They must be in full-time attendance at a Canadian high school or CEGEP, and be either Canadian citizens, permanent residents, or have studied at a Canadian school for at least two years. Note that the Chemistry and Physics Olympiads are separate competitions, and students are advised to focus their efforts on only one.

The CCPO Director, the Academic Committees, and the local organizing committee jointly set up for the NOF a rigorous, intensive program of lectures, laboratories and exams aimed at screening the top students while filling any gap that may still exist in their knowledge of the International Olympiad curriculum. All activities take place in a fully bilingual setting. A social evening—usually a banquet offered by the CCPO—provides welcome relief from the demanding schedule.

At the end of the week, the four-strong chemistry and five-strong physics teams are selected to represent Canada at the International Olympiads that summer.

In 2006, some 2,500 high school and CEGEP students from across the country participated in the preliminary selection rounds of the Canadian Olympiads. The best 28—14 chemistry and 14 physics students—were invited to the National Finals at the University of Toronto, from May 28 to June 4. We gratefully acknowledge the support and hospitality of U of T and warmly thank all the academic, clerical, technical staff, and volunteers who cheerfully contributed time and energy to make this event a great success.

In 2007 the NOF will take place from **June 3 to 10** at Université Laval in Québec City.

Other Regional and National Representatives

Physics students should contact:

– Quebec: **Prof. F. Buchinger**, Dept. of Physics, McGill University, 3600 University St., Montreal, QC H3A 2T8. E-mail: buchinger@physics.mcgill.ca.

Chemistry students should contact:

– British Columbia, Alberta, Yukon or Northwest Territories: **Prof. G. Bates**, Dept. of Chemistry, University of British Columbia, 2036 Main Mall, Vancouver, BC V6T 1Z1. E-mail: flip@chem.ubc.ca;

– Manitoba and Saskatchewan: **Prof. G. Hickling**, Dept. of Chemistry, University of Manitoba, Winnipeg, MB R3T 2N2. E-mail: hckling@cc.umanitoba.ca;

– Quebec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland: **Ms. C. Filteau**, Chemistry Olympiad Program, Champlain Regional College, Lennoxville, QC J1M 2A1.

Information is also available from the National Director:

Dr. Stanislaw Skonieczny, Canadian Chemistry and Physics Olympiads, Department of Chemistry, University of Toronto, 80 St. George St., Toronto, ON M5S 3H6.

Tel: 416 926 4094. Fax: 416 978 1631.

E-mail: olympiad@chem.utoronto.ca.

Our web site is located at:

www.ccpo-occp.ca.

International Olympiads

Held every year since 1967, the International Chemistry and Physics Olympiads now attract over 80 countries. The goal of these competitions is the encouragement of excellence in science education; they are the most prestigious of their kind for students at the high school or CEGEP level.

All participating countries commit enormous amounts of time, energy, and money to preparing their most talented students for these high-caliber competitions which test both theoretical knowledge and laboratory skills.

The CCPO makes travel arrangements (excluding passports/visas) to the sites of the two International Olympiads. The teams usually leave a few days before the start of the Olympiads so as to recuperate and adapt.

The costs for each team as a result of activities connected to the Olympiads, from the day of departure until the day of return, are borne by the Organising Committees: the host countries pay for organisation, food, accommodation and excursions, plus prizes. The CCPO covers transportation costs to the Olympiad venues for the students and team leaders.

More information about the regulations and statutes of the International Olympiads may be found at:

www.jyu.fi/tdk/kastdk/olympiads/,
and www.icho.sk/index_regulations.html.

In 2007, the 39th International Chemistry Olympiad will be held in Moscow (Russia) from **July 15 to 24**. The 38th International Physics Olympiad will take place in Isfahan (Iran) from **July 13 to 21**.

For more information on the 2006 International Chemistry and Physics Olympiads, please refer to the following web sites:

icho2006.kcsnet.or.kr (chemistry) and
www.ipho2006.org (physics).

The 2006 International Chemistry Olympiad

The 38th International Chemistry Olympiad (IChO) was held in Gyeongsan, Gyeongsanbuk-do, Republic of Korea from the July 2nd to 11th, 2006. A total of 66 countries participated in the competition.

The delegation selected at the NOF this year to represent Canada at the 38th International Chemistry Olympiad in Gyeongsan (South Korea) consisted of:

Guang Yi (Peter) Lu	University of Toronto Schools, ON
Kent Huynh	University of Toronto Schools, ON
Tianyi (Charlie) Wang	University of Toronto Schools, ON
Dmitry Pichugin	W.L. Mackenzie CI, ON

Before leaving for Korea the chosen four were invited to the University of British Columbia's Department of Chemistry to prepare for the international competition. The preparation consisted of extended practical examinations (laboratories), laboratory techniques training sessions, and workshops covering the different areas of chemistry to be tested at the international Olympiad.

Our Korean hosts clearly showed that the organization of the Olympiad and the training of their impressive team was a matter of national pride. Dignitaries and high government officials, including the Deputy Prime Minister and Minister of Science and Technology, participated in the opening ceremony, emphasizing the importance of science, technology and education for Korea. Having transformed itself from one of the poorest countries in the world following the Korean War to one of economical development success, Korea has targeted excellence in science and technology as key objectives for their growth in a globalized framework.

The cultural program of this Olympiad reflected an attachment to traditions, with visits to historical sites of the Shilla Kingdom; lessons in folk arts and martial arts; and to everyone's delight, the succulent national dishes. At the same time it also reflected the impetus for technological development, with visits to several industrial sites.

The academic programme prepared by a committee that included members of most major Korean chemistry departments was of a very impressive caliber, even by IChO's high standards. Although emphasis was placed on physical chemistry, topics on inorganic, organic, analytical and biological chemistry were also included. Most interestingly, some problems went beyond the mere testing of theoretical knowledge and required the students to deduce or infer the nature of chemical processes based on the data available to them.



From Left to Right: Tianyi (Charlie) Wang, Guang Yi (Peter) Lu, Grace Kim (Korean Guide), Jean Bouffard, Jonathan Pellicelli, Kent Huynh, and Dmitry Pichugin.

The Canadian team had their best performance ever (on par with 2003), winning one gold medal (Lu), the sixth gold medal in the history of Canadian participation at the IChO, two silver medals (Huynh, Wang) and one bronze medal (Pichugin). Peter Lu was the 13th overall among 254 participants. For a rare occasion, the Canadian Team outperformed their American neighbours in 2006. A total of 28 gold medals, 56 silver medals, 81 bronze medals and 10 honourable mentions were awarded.

Congratulations to all the students in our delegation, who brought home medals.

The problems, solutions and results are posted at icho2006.kcsnet.or.kr.

The 2006 International Physics Olympiad

The 37th International Physics Olympiad (IPhO) was held in Singapore from July 8th to 17th, 2006. A total of 93 countries participated in the competition making it the largest Olympiad in history.

The delegation selected at the NOF this year to represent Canada at the 37th International Physics Olympiad in Singapore consisted of:

Boris Braverman	Sir W. Churchill SS, BC
Lin Fei	Don Mills CI, ON
Patrick Kaifosh	U. of Toronto Schools, ON
Devin Trudeau	Dover Bay SS, BC
Lu Liu	Waterloo CI, ON

Before leaving for Singapore the chosen five were invited to the University of British Columbia's Department of Physics and Astronomy to prepare for the international competition. To help the students manage their time throughout the competition, they were involved in a two-day intensive training program which consisted of lectures and exams. The lectures included problem solving sessions on advanced topics in physics. The preparatory exams were the same length as the exams to be given at the international competition – that is, five hours long.

The Olympiad was quite clearly an event of primary importance to the Singaporean government and its educational authorities. The president of Singapore was initially scheduled to speak at the opening ceremony when the president was forced to cancel due to sickness. Several top government officials participated in the opening ceremony in his place. In their opening addresses they stressed the paramount importance of science, technology and education for Singapore's development.

Additionally, four Nobel Prize Laureates as well as a Templeton Prize Laureate gave lectures to the participants and socialized with them as well.

The social program was not only interesting but very entertaining as well, with visits to research centers, historical sites, a night safari, and a continuous "flow" of excellent Singaporean food. The students were delighted by this exotic experience, most of them on their first international trip.

The academic portion of the competition was organized by faculty members from the two major Singaporean Universities: the National University of Singapore (theoretical problems) and the Nanyang Technological University (experimental problems).

The problems were quite interesting and well prepared. They did not concentrate on extensive math but required creative thinking and the ability to describe physical reality using appropriate formulas and approximations. Marking by the academic committee was very thorough and fair, and in most cases, agreed closely with the marking of the leaders. The marking moderations (the process of establishing the final mark acceptable by both leaders and the local marking team) were performed in a good collegial atmosphere with very few real controversies.



From Left to Right: Guillaume Chabot-Couture, Patrick Kaifosh, Lu Liu, Boris Braverman, Lin Fei, Devin Trudeau, and Dr. Andrzej Kotlicki.

The Canadian team had their best performance ever, winning two gold medals (Braverman and Fei), the fourth and fifth gold medals in the history of Canadian participation at the IPhO, one bronze medal (Kaifosh) and an honorary mention (Trudeau). Boris was 10th overall among over 400 participants. A total of 37 gold medals, 48 silver medals, 83 bronze medals and 81 honorary mentions were awarded.

Congratulations to all the students in our delegation, who brought home medals.

The problems, solutions and results of the 2006 IPhO are posted at www.ipho2006.org.

Canadian Olympiad Delegations

The following Canadian students have taken part in the International Olympiads in the previous six years. The complete history of Canada's results since the beginning of our participation is available on our web site:

(www.ccpo-occp.ca/english/history.htm).

Prizes awarded appear as:

M (Honourable Mention), B (Bronze Medal), S (Silver Medal), G (Gold Medal).

1. Chemistry

2006 Gyeongsan, South Korea

Guang Yi Lu	U. of Toronto Schools	ON	G
Kent Huynh	U. of Toronto Schools	ON	S
Tianyi Wang	U. of Toronto Schools	ON	S
Dmitry Pichugin	W.L. Mackenzie CI	ON	B

2005 Taipei, Taiwan

Adam Lerer	U. of Toronto Schools	ON	B
Joel Tousignant-Barnes	Western Canada HS	AB	B
Kuan-Chieh Tseng	Yale SS	BC	B
Diane Quan	Western Canada HS	AB	

2004 Kiel, Germany

Ye Tao	Marianopolis College	QC	G
Jeffrey Mo	Sen. Patrick Burns JH	AB	S
Mara Inniss	Dawson College	QC	B
Adam Lerer	U. of Toronto Schools	ON	B

2003 Athens, Greece

Eric Zimanyi	Marianopolis College	QC	G
Matthew Arnold	Western Canada HS	AB	S
Arjun Bharioke	Marc Garneau CI	ON	S
Jordan Winick	Northern SS	ON	B

2002 Groningen, Netherlands

Liang Hong	U. of Toronto Schools	ON	S
Patrick Kim	Vaughan SS	ON	S
Dustin Tseng	Yale SS	BC	S
Charles Yeung	Alpha SS	BC	B

2001 Mumbai, India

Arya Ghadimi	Lisgar CI	ON	B
Bryony Lau	Western Canada HS	AB	B
Gerald Li	Sir W. Churchill SS	BC	B
Eric Zhu	Woburn CI	ON	B

2. Physics

2006 Singapore

Boris Braverman	Sir W. Churchill SS	BC	G
Lin Fei	Don Mills CI	ON	G
Patrick Kaifosh	U. of Toronto Schools	ON	B
Devin Trudeau	Dover Bay SS	BC	M
Lu Liu	Waterloo CI	ON	

2005 Salamanca, Spain

Ivan Dimitrov	Don Mills CI	ON	M
Michael McBreen	Collège F.-X. Garneau	QC	M
Brett Teeple	Western Canada HS	AB	M
Simon Viel	Champlain College	QC	M
Rongtao Dan	Point Grey SS	BC	

2004 Pohang, South Korea

A. Modir Shanechi	Don Mills CI	ON	G
Noémie Savard	Champlain College	QC	B
Yun Zhang	Sir W. Churchill SS	AB	B
Ali Reza Sharafat	Lisgar CI	ON	M
Tout Wang	Don Mills CI	ON	

2003 Taipei, Taiwan

J. Laflamme Janssen	Collège de St-Jérôme	QC	B
François Girardin	Champlain College	QC	B
Nan Yang	Birchmount Park CI	ON	M
A. Modir Shanechi	Don Mills CI	ON	S
R. Barrington Leigh	Old Scona	AB	S

2002 Bali, Indonesia

Henry Wong	St. Francis Xavier SS	ON	G
Andrew Wang	Earl Haig SS	ON	S
Jonathan Ruel	Collège F.-X. Garneau	QC	B
Garry Goldstein	W.L. Mackenzie CI	ON	M
Shannon Wang	Magee SS	BC	M

2001 Antalya, Turkey

Liviu Tancau	Don Mills CI	ON	S
Frédéric Dupuis	Western Canada SS	AB	B
Jesse McKeown	Champlain College	QC	B
Ian Leroux	Collège Brébeuf	QC	B
Isaac Li	Central Commerce	ON	

Future Sites

	2007	2008	2009
Chemistry	Russia	Hungary	England
Physics	Iran	Vietnam	Mexico

Participating Nations (2006)

Albania	Argentina	Armenia
Australia	Austria	Azerbaijan
Belarus	Belgium	Bolivia
Bosnia&Herzeg.	Brazil	Bulgaria
Canada	China	Colombia
Croatia	Cuba	Cyprus
Czech Repub.	Denmark	Egypt
Estonia	Finland	France
Georgia	Germany	Greece
Hong Kong	Hungary	Iceland
India	Indonesia	Iran
Ireland	Israel	Italy
Japan	Kazakhstan	Kuwait
Kyrgyzstan	Latvia	Liechtenstein
Lithuania	Macedonia	Malaysia
Mexico	Moldova	Mongolia
New Zealand	Netherlands	Norway
Pakistan	Peru	Poland
Portugal	Romania	Russia
Saudi Arabia	Serbia&Montenegro	Singapore
Slovakia	Slovenia	South Korea
Spain	Sri Lanka	Suriname
Sweden	Switzerland	Taiwan
Tajikistan	Thailand	Turkmenistan
Turkey	Ukraine	Uruguay
United Kingdom	United States	Uzbekistan
Venezuela	Vietnam	