



International Phytotechnology Conference

IPC2020 – Call for Abstracts

Hindsight is 2020: Looking at Past Successes for a Clearer Vision
of the Future of Phytotechnologies

28 September – 2 October 2020

The International Phytotechnology Society (IPS), in collaboration with the U.S. Department of Energy Argonne National Laboratory in the Chicago area in Illinois, USA, is sponsoring the 2020 International Phytotechnology Conference (IPC2020) at Argonne's Advanced Proton Source (APS) Conference Center and Guest House on 28 September to 2 October 2020. Please consider submitting an abstract for platform or poster presentation in any of the following topics:

- Long-Term Field Case Studies
- Phytotechnologies for Organics
- Phytotechnologies for POPs, Pharmaceuticals, and Other Emerging Chemicals of Concern
- Phytotechnologies for Metals, Metalloids
- Phytotechnologies for Nano-Scale Materials
- Phytotechnologies for Nutrients, Agricultural or Other Non-Point Source Pollution
- Phytotechnologies for Salt, Brine
- Phytotechnologies for Acidic, Sodic, or Alkalinized Sites
- Phytotechnologies for Mixed Wastes
- Phytotechnologies for Indoor and Outdoor Air Pollutants
- Alternative Landfill Covers/Evapotranspiration Covers
- Phytohydraulics, Riparian and Stormwater Management
- Constructed Treatment Wetlands
- Mitigation/Restoration Wetlands
- Eco-Restoration/Land Reclamation
- Carbon Sequestration and Climate Change/Resiliency
- Alternative Energy/Biofuels and Bioproducts from Plants or Phytomining
- Green Roof, Green Wall, and Green Infrastructure Design and Applications
- Soil Amendments for Phytotechnologies and/or Enhanced Plant Growth
- Soil-Plant and Micro/Phytobiome Interactions and Processes
- Phytotechnologies for Food Safety
- Phyto-Monitoring, Phyto-Forensics, and Plant Sensor Technologies

Please use the attached abstract template which should not exceed 1 page in total length. Furthermore, please identify the presenter and corresponding author and contact information even if it is the same individual. Student presenters should also clearly identify their highest completed level of education/grade level expected to be achieved at the time of the presentation. Students will automatically be entered into the student platform and poster presentation competitions. The official language of the conference will be English.

Important Dates:

30 April 15 May	Abstracts Due EXTENDED
31 May	Notification of Abstract Acceptance and Selection (platform or poster)
30 June	Argonne Gate Access Registration Due
31 July	End of Early Registration Rates
15 September	Final Agenda Published
28 September	Start of IPC2020

Registration Fees (in USD) ^a	Early (until 31 July)	Regular (after 31 July) ^b
Students ^c	\$250	\$250
IPS Member ^d	\$350	\$400
Non-Member	\$550	\$650

^a Includes most meals and all break refreshments

^b Regular registration may be closed early due to limited space

^c with valid student ID

^d with confirmed IPS membership in good standing

Program Overview:

28 September	Pre-Conference Workshop (all day)	\$75 (Optional)
	Reception (evening)	Included, alcohol extra
29 September	Opening Plenary (AM)	Included
	Technical Sessions (PM)	Included
30 September	Technical Sessions (all day)	Included
	Arranged Outing (evening; optional)	Included (transportation only)
1 October	Technical Sessions (AM)	Included
	Closing Plenary (PM)	Included
	Field Tours (post-conference; optional)	\$TBD
2 October	Field Tours – cont. (off site)	\$TBD (with above)

Please check back at the conference website for updates and additional information.

<https://phytosociety.org/events>

To join the International Phytotechnology Society, please visit: <https://phytosociety.org/login>

Conference Contact:

David Tsao, Ph.D

President, International Phytotechnology Society

david.tsao@bp.com

Registration Process - IMPORTANT

Registration to attend IPC2020 is a two-step process for all attendees. You need to register with the International Phytotechnology Society and also complete a visitor registration with Argonne National Laboratory to obtain visitor gate access.

Step 1. Registration and payment to International Phytotechnology Conference at <https://phytosociety.org/events>

Step 2. Registration with Argonne National Laboratory for site access. Argonne National Laboratory is a secure U.S. Department of Energy facility. General information on visiting Argonne National Laboratory is available at <https://www.anl.gov/visiting-argonne>. Site entry requirements and rules are listed at <https://www.anl.gov/site-entry-requirements>. Use this link <https://apps.anl.gov/registration/visitors> to begin the registration process. For the Sponsor email, enter knepperj@anl.gov.

It is recommended to complete the Argonne site access registration, **Step 2 by 30 June 2020** (even if you have not completed Step 1 yet). Site access registration will be handled as efficiently as possible, but it is imperative for non-U.S. citizens to register with Argonne as early as possible. Please contact Ms. Jeri Knepper (knepperj@anl.gov) with questions.

When arriving at Argonne for the first time, attendees should allow extra time to first go to the Argonne Information Center (just outside the Main Gate) to show photo identification and pick up their pre-arranged visitor gate pass. Once you obtain your visitor pass, you can go to the Main Gate where you will need to show your pass and identification to allow access to the site.

Lodging and Travel Information

A block of rooms is available at the Argonne Guest House (a 300-meter walk to the APS Conference Center). Early bookings are encouraged. To reserve a room at the Argonne Guest House, use: <https://www.anlgh.org>. The room block includes multiple king rooms (\$102.50/night) and a few rooms with two twin beds (\$112.50/night). Additionally, suites (four bedrooms, eight twin beds, two bathrooms, kitchen) may be available and ideal for student groups. Call the Guest House at 800-632-8990 to ask about availability.

On the registration website, enter "Intl Phytotechnology Society" as the Group Name, "Kathy Gorgan" as the Argonne contact, "CELS" as her department, and "630-252-8054" as her phone, and "Intl Phytotechnology Society" as the Group Name.

Many other hotels are in the vicinity, and several offer a free shuttle daily to and from Argonne. Room blocks are arranged at:

Aloft Bolingbrook \$97, per night plus tax, includes a breakfast.

<https://www.marriott.com/events/start.mi?id=1580252110091&key=GRP>

Crowne Plaza Burr Ridge \$108, per night plus tax, includes continental breakfast

<https://www.crowneplaza.com/redirect?path=hd&brandCode=CP&localeCode=en®ionCode=1&hotelCode=chibu&PMID=99801505&GPC=IPC&cn=no&viewfullsite=true>

Traveling through O'Hare International Airport (ORD)
40 km (25 miles) from the venue

To reach Argonne from O'Hare International Airport, take I-294 south to I-55. Exit west on I-55 (toward St. Louis) and continue for about four miles (6.5 km) to Cass Avenue. Exit south on Cass and turn right at the Argonne sign on Northgate Road, immediately south of I-55. Follow Northgate Road to the Visitor Reception Center. (Google Maps)

Traveling through Midway Airport (MDW)
27 km (16.5 miles) from the venue

To reach Argonne from Midway Airport, take Cicero Avenue north to I-55. Enter I-55 south and continue for about 14 miles (22.5 km) to Cass Avenue. Exit south on Cass and turn right at the Argonne sign on Northgate Road, immediately south of I-55. Follow Northgate Road to the Visitor Reception Center.

Information for users of limos, taxis, Uber, Lyft, etc. is at <https://www.anl.gov/site-entry-requirements>

Booking a ride with Lyft or Uber: Choose Argonne Guest House instead of Argonne National Laboratory as your pick up or drop off location. This will allow your driver to pick you up or drop you off at the front entrance of the Guest House instead of the Laboratory front gate.

GPS Navigation

Visitors are recommended to enter location text as "Cass Avenue and Northgate Road, Lemont, Illinois" in order to reach the Visitor Reception Center at the Main Gate entrance. Otherwise you may be directed to alternate gate entrances which are controlled-access.

Argonne National Laboratory
9700 S. Cass Avenue
Buildings 401 (APS) and 460 (GH)
Lemont, IL 60439 USA

Abstract Submission Guidelines (see attached Example):

Single page maximum

Font	Times New Roman
Title	14 pt Bolded, Capitalize Each Word (do not use all UPPERCASE)
Authors	12 pt Regular with superscript numbers for affiliations
Presenting Author	12 pt Underlined
Corresponding Author	mark with an asterisk (*)
Author Affiliations	10 pt Italicized preceded with superscript numbers
Correspondence Email	10 pt Italicized preceded with an asterisk (*)
Main body	12 pt Regular single spaced
Keywords (5 maximum)	12 pt Regular separated with commas

Presentation Preference and Students, please indicate appropriately.

Development of a Toluene Phytoremediation Conceptual Model in Shallow Fractured Bedrock

M. Ben-Israel¹, J. Fernandes¹, P. Wanner¹, E.A. Haack², J.G. Burken³, D.T. Tsao⁴, R. Aravena⁵, B.L. Parker¹, K.E. Dunfield^{1,*}

¹University of Guelph, 50 Stone Rd. E., Guelph, Canada

²EcoMetrix Inc., 6800 Campobello Rd., Mississauga, Canada

³Missouri University of Science and Technology, 1401 N Pine St., Rolla, USA

⁴BP Corporation North America, Inc., 150 W. Warrenville Rd., Naperville, USA

⁵University of Waterloo, 200 University Ave. W., Waterloo, Canada

Presenting author degree/grade level completed at time of presentation (student presenter only): M.S.

* corresponding author e-mail: dunfield@uoguelph.ca

The utility of poplar trees for phytoremediation of BTEX-contaminated soil and groundwater is well established; however, dynamic subsurface and plant-related processes make evaluation of remedial activities in impacted fractured bedrock difficult. Our present efforts are aimed at assessing the physical, chemical, and biological conditions affecting toluene attenuation in shallow dolostone bedrock at an industrial site in southwestern Ontario, with a hybrid poplar (*Populus × canadensis*) phytoremediation tree stand. Physical characterization efforts to-date utilizing the Discrete Fracture Network Approach¹ have yielded a high-resolution conceptual model of hydraulic and contaminant concentration profiles of the site. Maximum toluene concentrations are found at the vadose zone/water table interface, with the centre of mass located favourably for uptake and/or *in situ* degradation by the phytoremediation system.

Toluene phytoscreening² and microbial toluene degradation gene and transcript quantification performed to-date have confirmed that phytoextraction and biodegradation are occurring on site. CSIA data also support the occurrence of toluene degradation in the groundwater. However, questions remain related to the extent of biodegradation, degree of groundwater use by the trees, and response of the system to seasonal variability. Moreover, the influence of the poplar stand on site hydrology has yet to be resolved.

We are addressing these critical data gaps to develop a refined phytoremediation conceptual model and performance evaluation over the 2017 growing season that is both quantitative and mechanistic. Phytoscreening is being repeated under wet and dry seasonal conditions, while isotope analysis of poplar transpiration streams and source water is being conducted to clarify the extent of phytoextraction. Toluene is available to trees in both vapour and aqueous phases, so groundwater and vadose zone vapour phase toluene concentrations are being measured and assessed using CSIA analysis. Finally, hydraulic influences of the stand are being measured using groundwater transducers and transpiration (sap velocity) probes. These combined data types provide multiple lines of evidence to inform a conceptual model of the system's subsurface and plant-related processes influencing toluene uptake and attenuation, to provide a quantitative basis for predicting phytoremediation efficacy and time-scales.

Keywords (5 maximum):

Phytoremediation, phytoscreening, toluene, fractured bedrock, CSIA

Presentation Preference: ___ Poster Platform ___ No Preference

Student Presentation? Yes ___ No

If yes, provide degree level and years completed at time of presentation: M.S.