



CKC 2020 SUMMARY REPORT

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PUBLISHED BY AKCSE

THE ASSOCIATION OF KOREAN-CANADIAN SCIENTISTS AND ENGINEERS



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CKC 2020 website: akcse.ca/ckc2020

SUMMARY REPORT

CKC 2020

Canada-Korea Conference on Science & Technology

September 2-5 2020

**In-person at Sejong, Seoul in Korea
Kananaskis, Toronto, Ottawa, Halifax in Canada**

AKCSE hosts 10th Canada Korea Conference (CKC) on Science and Technology

The Association of Korean-Canadian Scientists and Engineers (AKCSE) was established in 1986 as a non-profit professional organization and has grown to nearly 3,000 registered members with 11 Local Chapters, 16 University Chapters, 7 Young Professional Societies, and 4 Professional Societies across Canada. With a theme “ST & I Collaborations for an Agile Future”, AKCSE successfully hosted 10th CKC in person & online with over 660 participants with 16 Sponsoring Organizations.

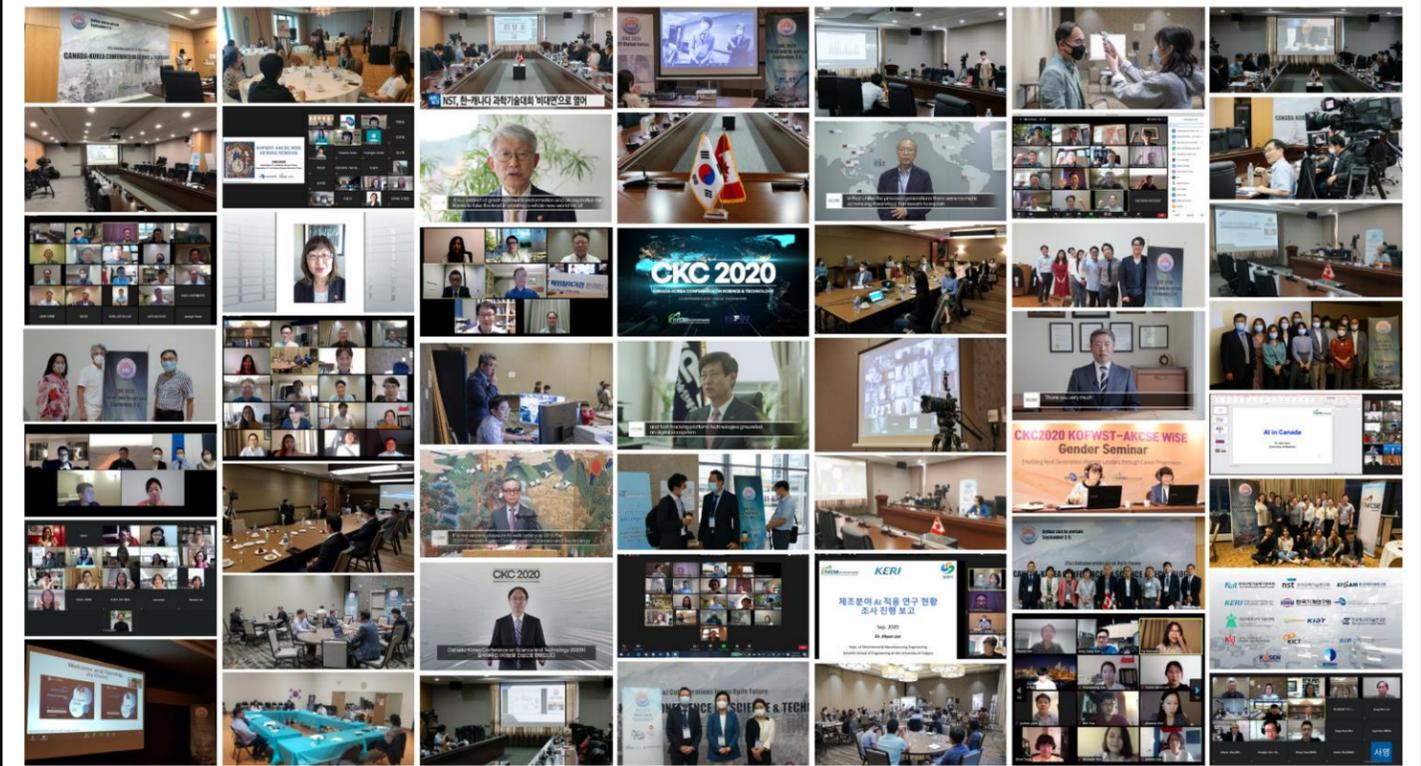
CKC 2020 OVERVIEW

- Date September 2(Wed) - 5 (Sat), 2020
- Venue In person (Sejong, Seoul in Korea & Kananaskis, Toronto, Ottawa, Halifax in Canada) & Online
- Theme ST & I Collaborations for an Agile Future
- Co-organizers Korean Federation of Science and Technology Societies (KOFST) Association of Korean-Canadian Scientists and Engineers (AKCSE)



CKC 2020 KEY EVENTS

- 4th STI Forum: ST & I Collaborations for an Agile Future
 - SDG1: Response to Emerging Infectious Disease
 - SDG2: The Future of Lithium-Ion Battery
- NST: AI Roundtable
- NST - KGRIs S&T Ambassador Credential Ceremony
- Korean Government Research Institutes R&D Brainstorming Forum
- Young Generation & Young Professional Conference
- Funding Agency: KEIT, IITP and KIAT Programs
- KOFWST Gender Seminar
- KWSE Korea-Canada WiSE Consilience Technical Workshop



CKC 2020 BY THE NUMBERS

About 666 Participants
 In-person 160 Participants (Sejong: 16, Seoul: 9, Ottawa: 20, Kananaskis: 45, Toronto: 10, Halifax: 18, Families of members: 42, Korea: 25, Canada: 135)
 5 Programs, 3 Special Sessions, 2 Forums
 22 Research Papers and 16 Proposal Presentations
 16 Sponsoring Organizations

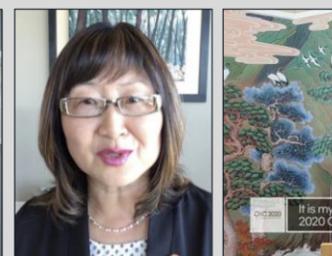


Remarkable Experiences at CKC 2020

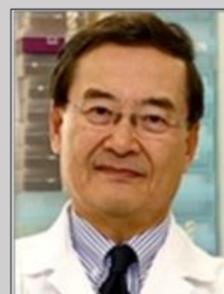
CKC is the most important activity of the AKCSE. Since 2011, the annual conference has been an excellent opportunity for presenting our latest research, innovative proposals, and networking. CKC 2020 was a great success comprising technical programs, special sessions, and the Young Generation and Young Professional programs.



OPENING CEREMONY



PLENARY SESSIONS



Plenary Session I. Emerging Viral Diseases and Control of COVID-19 Pandemic

Dr. Chil-Yong Kang
Professor, Schulich School of Medicine and Dentistry at the Western University



Plenary Session II. The Future of Lithium-Ion Battery

Dr. Jeff Dahn
Professor in the Department of Physics & Atmospheric Science at Dalhousie University



CKC Welcomes AKCSE Family & Delegates

CKC 2020 was an excellent opportunity for exchanging our latest research and technologies on the Collaborations on Agile Future. Research collaboration sessions provided overview and potential of Korea-Canada ST&I collaboration landscape and its challenges.

BANQUET



Building a Solid Strategic Partnership

Korea and Canada are on a path to success through greater collaboration in Science, Partnership in 2014 and the coming into force of the Free Trade Agreement in 2015. ST&I 2017. By hosting meetings during the conference, Annual Canada-Korea Conference becomes

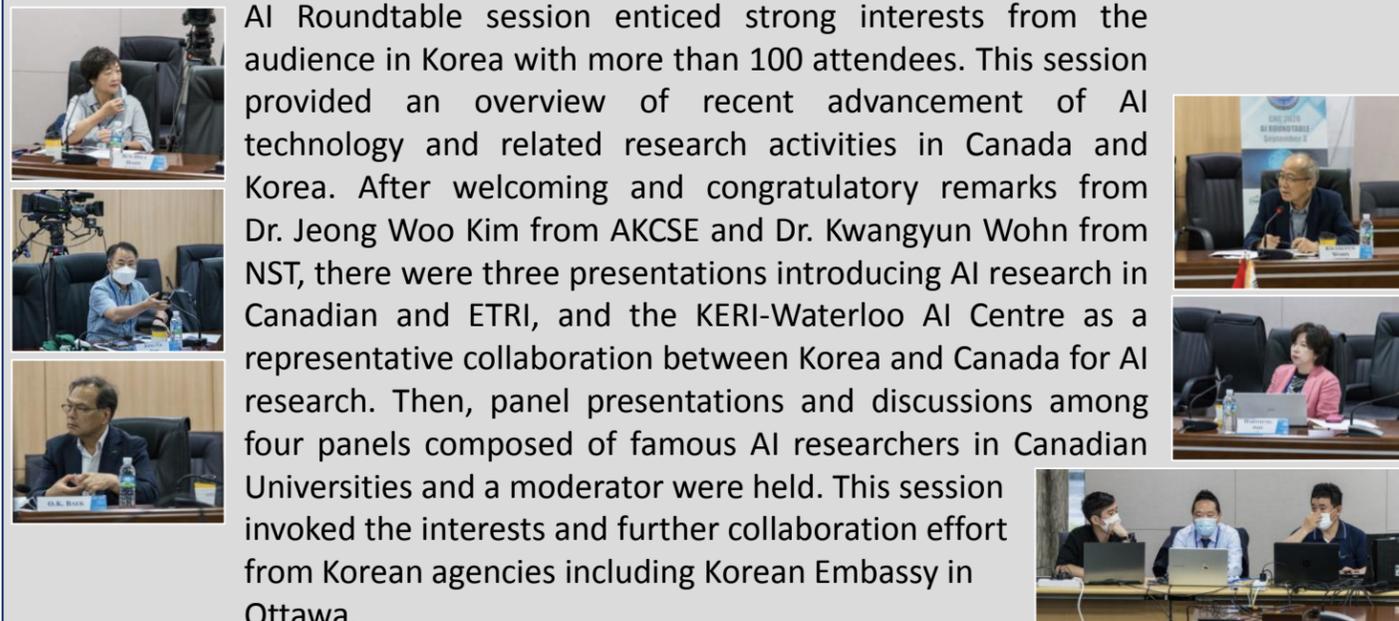
4TH ST&I FORUM: COLLABORATION FOR AN AGILE FUTURE SDG I: EMERGING INFECTIOUS DISEASE

In this EID session, AKCSE hosted internationally-acclaimed experts in the field of the vaccine, therapeutics, and formulation development in academia, industry, and national labs to share cutting-edge research and practical strategies to fight against COVID-19. In the opening keynote, Dr. Chil-Yong Kang at the Western University gave a high-level overview of the global COVID-19 vaccine development efforts highlighting recent animal studies performed by his team. Dr. Seungtaek Kim at Institut Pasteur Korea and Dr. Haryoung Poo at KRIBB presented their breakthrough findings in therapeutic interventions and vaccine formulations that could be effectively used to respond to the current pandemic. Throughout the session, participants recognized the value of more extensive Canada-Korea collaborations, and gained the better understanding of the important role of AKCSE in creating and fostering mutual collaboration among researchers between Korea and Canada.



NST: AI ROUNDTABLE

AI Roundtable session enticed strong interests from the audience in Korea with more than 100 attendees. This session provided an overview of recent advancement of AI technology and related research activities in Canada and Korea. After welcoming and congratulatory remarks from Dr. Jeong Woo Kim from AKCSE and Dr. Kwangyun Wahn from NST, there were three presentations introducing AI research in Canadian and ETRI, and the KERI-Waterloo AI Centre as a representative collaboration between Korea and Canada for AI research. Then, panel presentations and discussions among four panels composed of famous AI researchers in Canadian Universities and a moderator were held. This session invoked the interests and further collaboration effort from Korean agencies including Korean Embassy in Ottawa.



for ST & I Collaborations for an Agile Future

Technology and Innovation (ST&I). The bilateral relations have been enhanced by a Strategic Agreement that sets the framework for substantial cooperation has been in effect since May an ideal platform for R&D collaboration between the two countries.

SDG II: THE FUTURE OF LITHIUM-ION BATTERY

According to the UN, 17 Sustainable Development Goals which is a blueprint to achieve a better and sustainable future for all. To address the urgent call, Canada and Korea have discussed the possible collaborations towards to reaching one of goals dealing with energy. Lithium-ion batteries are used in many applications such as cell phones, computers, tools, vehicles and now store energy from renewables for later use. We have invited a world renown researcher, Tesla Chair, Dr. Jeff Dahn from Dalhousie University to give a presentation related to million mile batteries, some of challenges and solutions and future outlooks. His research provided foundations for future Lithium Ion battery technologies as well as a quick and efficient way to test performances of batteries. The keynote session is followed with R&D discussions with Dr. Dahn and delegates of KIER for possible future collaborations. Many questions were raised and Dr. Dahn and others have provided exciting prospects related to future energy particularly dealing with next generation of batteries.



NST ST&I Ambassador Conference

This session was organized in order to facilitate communications and collaboration between Korea Government Research Institutes (KGRIs) and corresponding AKCSE ambassadors. It also aimed to encourage and support the ambassadors to closely work with KGRIs to relate AKCSE members with KGRIs for collaborative research. The session was composed of summary of previous year's ambassador activities and announcement of new ambassadors for 2020-2021: NST, KERI, KIMM, KITECH, KIST, KISTI, KIGAM, KIER, KRICT, KEIT, and KIAT.

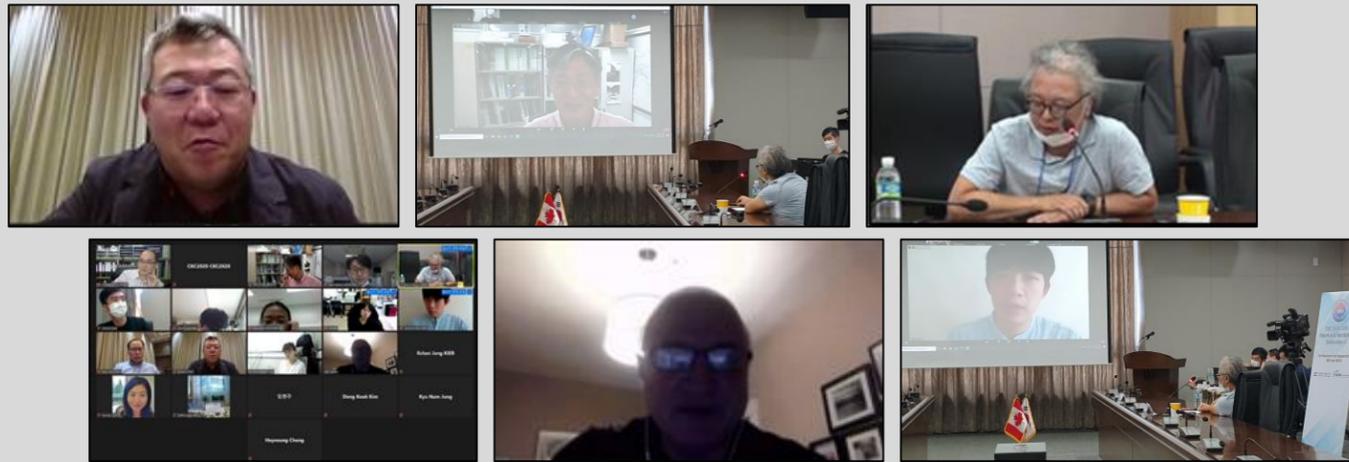


R&D Brainstorming Sessions,

For providing a friendly platform, the CKC has hosted R&D Brainstorming Sessions, Special Sessions, and Forums for participants and delegates from Korea and Canada. This is one of the CKC's intrinsic functions. In particular CKC 2020 was highly meaningful

KIER Forum: Lithium-Ion Battery

Lithium-ion batteries are used in many applications such as cell phones, computers, tools, vehicles, and now store energy from renewables for later use. KIER presented its current research interest and status and discussed the research direction with Prof. Dahn (Dalhousie University), who participated in CKC2020. In connection with next CKC 2021 in Halifax, KIER also discussed possibility of visiting Prof. Dahn's lab and joint research in the future.



KIGAM Project Presentation

On September 3, a research meeting between KIGAM and Queen's University took place through Zoom. The Wireless Artificial Intelligence Lab (WAI Lab) lead by Prof. Il-Min Kim at Queen's University conducted research with KIGAM to innovate the technologies in Geosciences by utilizing Artificial Intelligence (AI). Prof. Kim presented the progress of the research project conducted in 2020. In this presentation, he discussed the strategy taken for the joint research and the open innovation issues for AI-based Geoscience. At the end of the meeting, a number of constructive comments were made by the researchers at KIGAM including Dr. Dong-Woo Ryu, Leader of Geo-ICT Team, and Dr. Bokchul Kim, President of KIGAM.



Forums, Workshops and Special Sessions

Sessions, and Forums for participants and delegates from Korea and Canada. This is one of the CKC's intrinsic functions. In particular CKC 2020 was highly meaningful as a number of successful events hosted during the CKC 2020 shown below.

KIMM - AKCSE International Joint Research Proposal Presentation

This session was to promote the research collaboration between KIMM (Korea Institute of Machinery & Materials) and AKCSE members. Four AKCSE members were invited to present their research proposals via Zoom, and all have been selected as collaborative research projects with KIMM. Each project has been funded at \$20,000 to perform short-term preliminary projects until the end of March of 2021.



KERI-AKCSE International Joint Research Program Session



This session was to present the current progress of the two projects in progress with KERI, including the AI research trend survey and the consulting project for small and medium-sized companies in Changwon city. Prof. Jihyun Lee in the University of Calgary had a presentation on the trend of artificial intelligence research in North America. After the presentation, members in AKCSE discussed with KERI about collaborations in industry 4.0 areas such as AI, 3D printing, IoT, smart factory etc.



EQUITY, DIVERSITY AND INCLUSION (EDI):

Embracing more fully ideas of inclusiveness and diversity among the AKCSE members, process related to equity, diversity and inclusion (EDI) focused objectives. women participate fully in Canada's technology and engineering workforce. every accounting for nearly 35%. Although we have seen a year-on-year increase in the number in the arena of S&T innovation. The efforts by the AKCSE to deal with the EDI concept to AKCSE co-organized programs with Korea's two leading organizations of women scientists

KOFWST (KOREA FEDERATION OF WOMEN'S SCIENCE & TECHNOLOGY ASSOCIATIONS)

KOFWST is a leading federation of women science and technology associations composed of 63 member organizations in the field of science and technology. It has grown remarkably considering the fact that KOFWST was established in 2003 with only 4 member organizations. KOFWST has now become a strong organization leading Korea's science and technology field, not only for female scientists and engineers but also for its efforts to make science and technology applicable to people's everyday lives.



The theme of CKC2020 KOFWST's session was "How to Prepare a Growth Ladder" for next-generation women scientist and engineer leaders to support the development of outstanding women leaders in the STEM field across Korea and Canada. By networking with Korean and Canadian women leaders as a key element for expanding the next-generation women leadership, the main goal of the session was to maximize the potential of the next generation of women scientists and engineers, and make positive and constructive changes in their lives and communities.



WOMAN IN SCIENCE AND ENGINEERING AT CKC 2020

we try to build respect into all its relationships through a dialogue and understanding To help achieve gender balance in the AKCSE, we seek to address various issues – ensuring As a result, the participation of woman scientists and engineers has been increasing of women working in science and technology (S&T) areas, they are still under-represented the organizational principle resulted in several events planned and organized at CKC2020. and engineers (i.e., KOFWST and KWSE).

KWSE (THE ASSOCIATION OF KOREA WOMAN SCIENTISTS & ENGINEERS)

KWSE was founded in 1993, as the first association of women scientists and engineers in Korea. KWSE aims to empower the scientific capacity as well as to uplift the status of women in academia, research institutes, and industry. Their mission and vision includes expansion of social infrastructure for women scientists and engineers, encouragement of R&D activities by facilitating information exchange, enhancement of social status and rights, and strengthening of the relationship among women scientists and engineers.



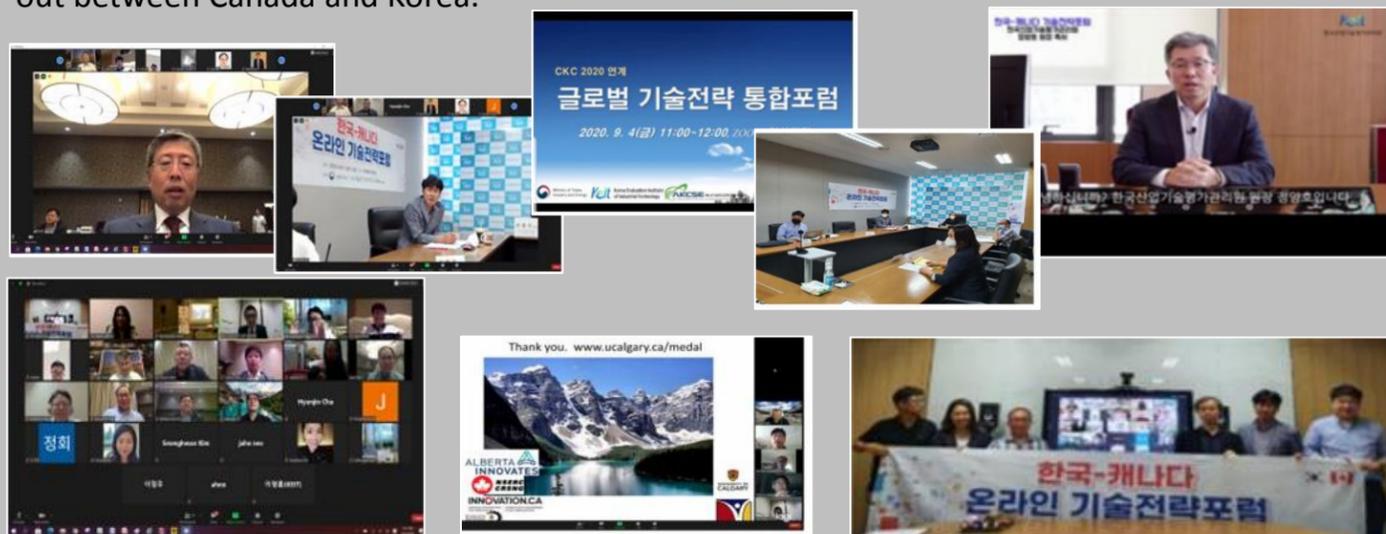
This session is one of the CKC2020 WiSE program series to promote Korea-Canada WiSE researchers by engaging with activities outside of their disciplined areas, and extending networks in science, technology and society across two countries. In this meeting, the Korea-Canadian Women Scientists and Engineers Convergence Workshop was held to 1) expand the interdisciplinary exchange of science and technology between Korea and Canada, 2) strengthen the research capabilities of women scientists and engineers and establish a cooperative network between the two countries, 3) build a foundation for women scientists to break academic boundaries and discover potential global R&D projects, and 4) discuss ways to reinforce such mutual exchanges.

BRIDGING KOREAN GOVERNMENT FUNDING AGENCIES

The AKCSE and its annual Canada-Korea Conference on Science and Technology (CKC) offer unique and exclusive opportunities for both Korean Government Funding Agency and Korean-Canadian Scientists and Engineers to promote and foster innovative STI research collaborations.

KEIT Global Technology Strategy Forum

In this meeting, KEIT introduced its R&D policy and strategy to AKCSE members, and showcased a couple of success stories of the KEIT global R&D projects currently being carried out between Canada and Korea.



KEIT-AKCSE Roundtable

The KEIT-AKCSE Roundtable reviewed the current status of international collaborative research works among Korea's industrial technology R&D projects and discussed strategy to facilitate further development of international collaborations in the future.



AND KOREAN-CANADIAN SCIENTISTS AND ENGINEERS

In 2020, IITP (Institute for Information and Communications Technology), KIAT (Korea Institute for Advancement of Technology), and KEIT (Korea Evaluation Institute of Industrial Technology), joined the CKC to organize their institutional events with AKCSE.

IITP International Joint Research Program Session

Progress in three AI projects at the University of Calgary supported by IITP was presented by project leads and participating students from Korea and Canada. The researchers also consulted with IITP staffs regarding problems arising from Covid-19 and potential solutions.



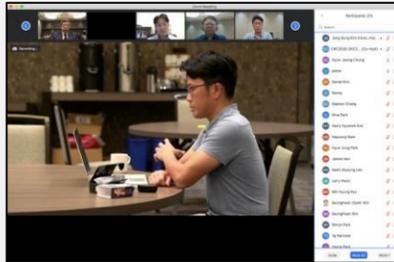
KIAT's K-TAG Seminar and General Meeting

The Korea Institute for Advancement of Technology (KIAT) is a comprehensive technology support organization committed to promoting industrial technology growth in Korea. Korea-Technology Advisory Group (K-TAG) Canada launched by KIAT and AKCSE in July 2016, consists of Korean Science and engineering experts in Canada. Main activities of K-TAG are 1) to assist Korean Small and Medium-sized Enterprises (SMEs) in finding Canadian Innovative partners, 2) to provide advice as well as information related to Korea-Canada R&D cooperation and 3) to develop and participate in Korea-Canada joint R&D projects. In this meeting, the members of K-TAG Canada in various technical areas gathered together to 1) seek research collaborations, 2) present/propose innovative research projects, and 3) discuss R&D project planning with delegates of KIAT.



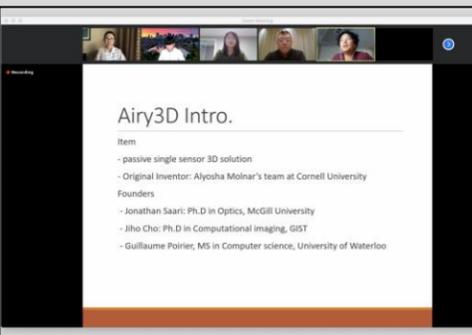
YGP/YPF ALUMNI NETWORKING

The YGF/YPF Alumni Networking Program was a two-part program intended for previous YGF/YPF attendees to network and provide feedback on their experience for reference in planning for future YGF/YPF programs. In the first half of the program, YGF/YPF attendees from 2017, 2018 and 2019 were able to virtually connect with each other. In the second half, attendees were assigned to small group discussions with a member of the HQ, who facilitated reflective conversations about the proceedings and takeaways from YGF and YPF. After the small group discussions, the attendees reconvened for a recap of common feedback and last-minute networking.



YGP ENTREPRENEURSHIP SESSION

The YGP Entrepreneurship Session was a two-part program comprised of keynote presentations and a group case competition. Our keynote speakers were established entrepreneurs in the fields of machine learning applications in depth sensing and processing and urban planning, who generously shared their experiences and insight leading up to their success. The two presentations were followed by a case study competition, where YGP participants were encouraged to work creatively and collaboratively in groups of three to spontaneously present on a case study.



Uyfae Lee

Produces videos to inform and engage the public on the complex issues surrounding our cities

His videos on his YouTube channel 'About Here' have been viewed hundreds of thousands of times, helping raise awareness on topics such as housing, city streets, and much more. In addition to his YouTube channel, Uyfae produces a column with CBC Vancouver under the same name where he challenges audiences to 'rethink' their city.



Jiho Cho

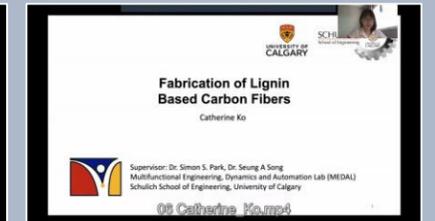
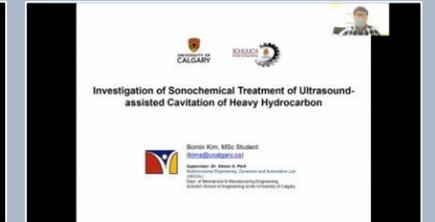
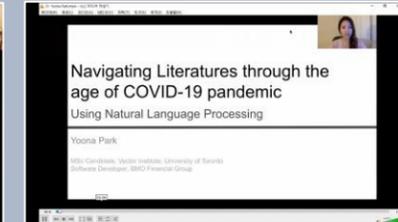
Computer vision & Machine learning scientist

10 years experience designing and implementing software algorithms, with a focus on depth sensing and processing. He is a Co-Founder & VP Advanced Research at Airy3D Inc. in Montreal, Canada. Airy 3D Inc. is building a depth camera that is underpinned by a transmissive diffraction mask (TDM) made with standard semiconductor technology. At Airy3D, he founded the computer vision and machine learning (CVML) group and has been leading the group to develop novel algorithms to estimate depth information. He holds a PhD in Information and Mechanics (IGT, Korea) with stints at ETH Zurich, the University of Tokyo and Vienna University of Technology. He published more than 20 high-impact scientific papers and 3 international and national patents.

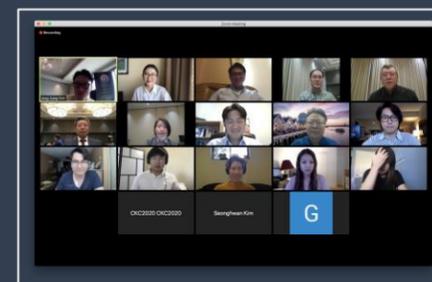
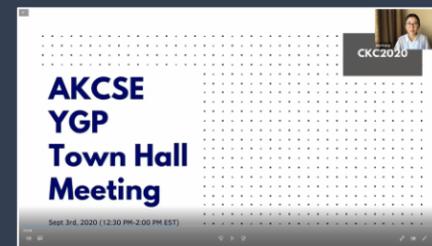


YGP RESEARCH COMPETITION

The YGP Research Competition, held in CKC each year, offers undergraduate and graduate students and postdoctoral researchers the opportunity to share their research and develop presentation skills. Eleven YGP members selected by the CKC organizing committee participated in the competition in 2020, presenting on various topics ranging from health promotion to artificial intelligence. Despite the limitations of an online conference and difficult circumstances due to the COVID-19 pandemic, the oral research competition enabled YGP researchers to reconnect with others in the STEM field. Furthermore, the participants received valuable feedback and insight from a group of expert judges.



YGP TOWN HALL MEETING



The YGP Townhall Meeting was a new initiative set forth to facilitate a YGP-wide discussion on essential topics such as how AKCSE is organized, deadlines for chapter registration, progress meetings, funding opportunities and a recap of previous years' wins and losses. The YGP Townhall Meeting was organized with the intention to provide a "general meeting"-type gathering for all YGP members, as opposed to only chapter representatives. Through this initiative, members were given the opportunity to sit in a meeting with HQ executives to learn and inquire about the various AKCSE-related topics listed above.

About AKCSE

Founded in 1986

Non-profit organization

Three levels:

- Local Chapters
- Young Professional (YP)
- Young Generation (YG)

Vision

- Promote the application of science & technology for the general welfare of society
- Foster international cooperation especially between Canada & Korea
- Help Korean-Canadian scientists & engineers develop their full career potential

Activities

- Canada Korea Conference (CKC)
- Young Generation Forum (YGF)/Young Professional Forum (YPF)
- Scholarships, internships, exchange programs, awards & honours,
- Job referrals, career development programs



What's New in 2020?

YGP Structure

10-15% to be in the mix with some group this year to help manage the pandemic / new virtual connections

Other connections within regions

Deadlines for Registering Your Chapter

- New registration periods:
 - September - October
 - January - February
 - Month ending the 15th and 30th

Progress Meetings/Funding Opportunities

COVID-19 related resources ideas for a good initiative to use this into funding

Chapter concerns/recommendations

Award and Scholarship Ceremony

AKCSE scholarship committee and CKC award committee hold Award and Scholarship ceremony at each CKC. This year, the ceremony was held during the formal Banquet. This year, in particular, a number of awards and scholarships were given to Excellent Young Professionals and Young Generations.



- Commendation from the Minister of Science and ICT (MSIT), Korea
- KOFST Engineer of the Year Award
- KOFST Scientist of the Year Award
- 2019-2020 Annual AKCSE Best Service Award
- 2019-2020 Annual AKCSE Best Chapter Award
- 2019-2020 Annual AKCSE Best Student Member Award
- 2019-2020 Annual AKCSE Early Achievement Award
- 2019-2020 Annual AKCSE Best Young Professional Member Award
- 2019-2020 Annual AKCSE WiSE Award
- AKCSE Best CKC Volunteer Award
- SK Scholarship in Life Sciences
- Green Cross Scholarship
- CS WIND Scholarship
- KONA Scholarship
- Goryeo Medical Foundation Scholarship in Life Sciences
- YGP Entrepreneurship Award



KISTI-AKCSE R&D Canada

After launching R&D Canada to public in CKC2019, the R&D Canada has been used as a formal platform to connect AKCSE members to Korean scientific society. AKCSE and KISTI are developing new tools and environment to provide high quality and more quantitative R&D information to public. In this meeting, the activities and achievements of operating R&D CANADA in the last year were reviewed, and the future direction and strategy for its improvement were discussed.



See You All Again Next Year in Halifax at the CKC 2021

CKC2021 in Halifax September 1 – 4, 2021
 Theme: *New Opportunities in the New Normal*



Organizers of CKC 2020

Organizing Committee

Conference Chair: AKCSE President



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Venue: Where is in the world?

In-person Venues in Korea & Canada



Seoul



Ottawa



Halifax



Sejong



Kananaskis



Toronto

Online Access Everywhere



Canada-Korea Conference (CKC):

Since the 1st CKC was held in 2011 with around 120 participants, CKC now becomes as a unique conference for scientists and engineers



Montréal 2017
August 6-8

**Canada-Korea Conference
on Science and Technology**
*BUILDING A GREAT ST&I COOPERATION
FOR FUTURE SUCCESS*

AKCSE 캐나다한국과학기술자협회 KOFST 한국과학기술단체총연합회 과학기술정보통신부

Grows steadily year after year.

the number of programs and participants has increased every year. from Canada and Korea for networking and exchange of knowledge and information.



2019 Canada-Korea Conference on Science and Technology

"Clean Technologies and Sustainable Future"

June 16-19, Banff, Alberta, Canada



2018 Canada-Korea Conference on Science and Technology

"Ingenuity: The Fourth Industrial Revolution"

June 17-20, Vancouver, British Columbia



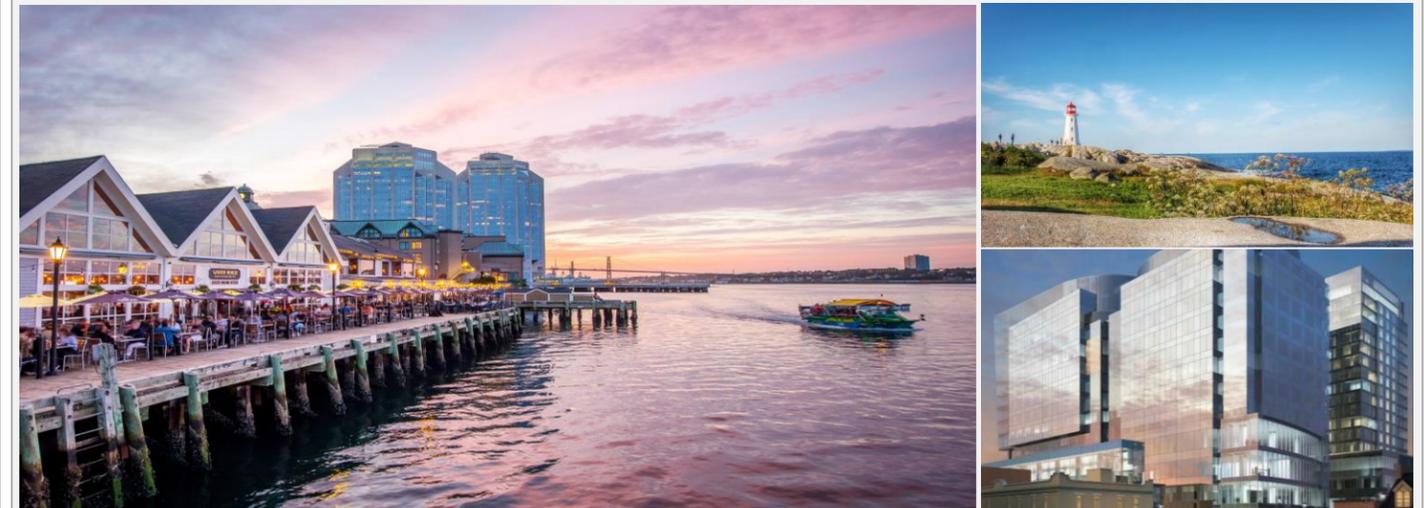
2020 Canada-Korea Conference on Science and Technology

September 2-5 | Online and In-person

Kananaskis, Ottawa, Toronto & Halifax, Canada | Sejong & Seoul, Korea



THANK YOU FOR YOUR SUPPORT & PARTICIPATION!



CKC 2021 – ATLANTIC CANADA (HALIFAX)



“New Opportunities in the New Normal”

September 1 (Wed) - 4 (Sat), 2021

E-mail: ckc@akcse.org, info@akcse.org

Homepage: akcse.ca/CKC2021

Date: September 1 (Wed) - 4 (Sat), 2021

Venue: Halifax Convention Centre & Sutton Place Hotel, Halifax, Nova Scotia, Canada

Main Program (Tentative):

- Day 1 (9/1, Wed) Registration, Welcome Reception
- Day 2 (9/2, Thu) Opening Ceremony and Plenary Session I
ST&I Forum, FameLab Competition
Poster Competition, Why Canada?
Off-site Technical Program
- Day 3 (9/3, Fri) Plenary Session II, Sustainable Development Goals (SDGs) I
SDGs II
- Day 4 (9/4, Sat) Research Showcase I - KGRI
Research Showcase II - Funding Agency
Research Showcase III - AKCSE
R&D Canada Follow-Up, SDGs III