



## **APEC SCIENCE PRIZE for INNOVATION, RESEARCH and EDUCATION (ASPIRE)**

### **OVERVIEW**

The APEC Science Prize for Innovation, Research and Education (“ASPIRE”) is an annual award which recognizes young scientists who have demonstrated a commitment to both excellence in scientific research, as evidenced by scholarly publication, and cooperation with scientists from other APEC member economies, including inclusive and interdisciplinary collaborations.

The ASPIRE Prize supports APEC’s mission to:

- Strengthen international science and technology networks;
- Enhance economic growth, trade and investment opportunities in harmony with sustainable development, through policies, innovative R&D and technologies, and knowledge sharing; and
- Improve linkages and efficiency between research and innovation.

### **ASPIRE 2022 NOMINATION THEME: INNOVATION TO ACHIEVE ECONOMIC, ENVIRONMENTAL, AND SOCIAL GOALS**

Each year the APEC host economy is asked to provide a theme to guide nominations for the ASPIRE Prize to be awarded in their host year. For its host year of 2022, Thailand selects “Innovation to achieve economic, environmental, and social goals” as the ASPIRE nominating theme.

This theme focuses on advancing the BCG economy concept to integrate a bio-circular-green (BCG) economy model, as well as the Environmental, Social and Governance (ESG) practices and the Responsible Business Conduct (RBC) among the private sector. At its core, the theme will showcase impactful research created to transform the whole of society to become more balanced and sustainable. This may include research that encourages biological advances, promotes sustainability, or achieves better understanding of agricultural systems. Nominees should demonstrate a commitment to excellence in scientific research and cooperation with scientists from other APEC member economies, including inclusive and interdisciplinary collaborations, in subjects such as: biology, chemistry, environmental science, physics, mathematics, economics, social sciences and other relevant fields.

### **ELIGIBILITY**

Any citizen of an APEC member economy is eligible to be nominated for the ASPIRE Prize. He/she must be at the time of his/her nomination and be under the age of 40 as of 31 December of that year (i.e., all 2022 nominees must be under the age of 40 as of 31 December 2022).

### **SELECTION PROCESS**

Each member economy, through its representative on the APEC Policy Partnership for Science, Technology and Innovation (PPSTI), is invited to nominate one young scientist under the age of 40 to be considered for the 2022 ASPIRE Prize.

Once nominations are received, PPSTI members rank the nominees through a selection ballot to determine the winner. PPSTI members are asked to judge the nominees based on how well they have demonstrated:

- Excellence in scientific research, as evidenced through scholarly publication;



- Commitment to cooperation with scientists from other APEC member economies; and
- Contribution to the theme of “Innovation to achieve economic, environmental and social goals.”

## ASPIRE PRIZE SPONSORS

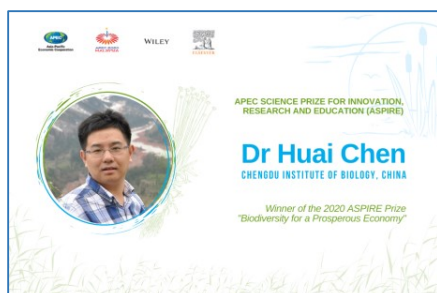
Wiley and Elsevier, two of the world’s leading publishers of scholarly scientific knowledge, have generously committed to funding prize money in the amount of \$25,000 USD.

## PREVIOUS ASPIRE PRIZE WINNERS



### 2021: Diverse Knowledge for a Sustainable Future

Dr. Jessica Bogard, a dietitian and public health nutritionist from Australia, was awarded the 2021 ASPIRE Prize, for her research focusing on boosting the potential of underutilized local and indigenous food to reduce malnutrition, particularly among pregnant women and young children. Dr. Bogard pioneered the development of a database of nutritional quality of more than 50 species of fish and aquatic food and found that certain indigenous species of fish are rich sources of a multitude of micronutrients, but their availability is declining. She is a research scientist at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australia.



### 2020: Biodiversity for a Prosperous Economy

Dr. Huai Chen was awarded the 2020 ASPIRE Prize at an online ceremony by Dr. Siti Hamisah Tapsir, Secretary General, Ministry of Science, Technology and Innovation (MOSTI) Malaysia. Dr. Chen is a professor at Chengdu Institute of Biology, Chinese Academy of Sciences. His research is focused on wetland biodiversity and nature’s contribution to people. Dr. Chen’s findings lead to a better understanding of these wetlands including protecting, developing new generation models for methane emissions and enhancing assessment of carbon storage and ecological value.



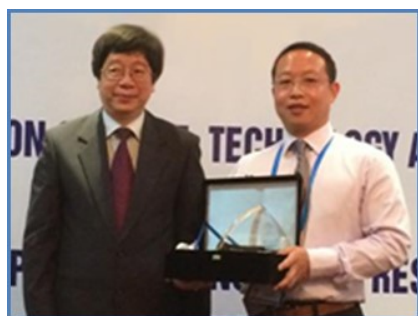
### **2019: Natural Laboratories**

Dr. Yun Hau NG was awarded the 2019 ASPIRE Prize in Puerto Varas, Chile by Dr. Nicole Ehrenfeld, Director, Scientific Initiative Millennium, Ministry of Economy, Chile. Dr. Ng is an associate professor at the School of Energy and Environment, City University of Hong Kong, China. His research is focused on the development of highly efficient photocatalytic systems to mimic natural photosynthesis to produce clean hydrogen from water. In short, he uses sunlight to split water into clean hydrogen



### **2018: Smart Technologies for Healthy Societies**

Dr. Madhu Bhaskaran of Australia was awarded the 2018 ASPIRE Prize in Port Moresby by Hon. Pila Niningi, Minister for Higher Education, Research, Science and Technology of Papua New Guinea. Dr. Bhaskaran is a professor at RMIT University, Melbourne, Australia where her work transforms the way we imagine, use and interact with electronic devices and sensors. She has developed ways to combine functional oxide materials processed at high temperatures with elastic and plastic materials. Her work has led to the development of wearable elastic electronics and sensors, including gas and UV sensors and flat optical devices—all of which are stretchable, optically transparent and as thin as a nicotine patch.



### **2017: New Material Technologies**

Dr. Yanwu Zhu of China was awarded the 2017 ASPIRE Prize in Ha Noi by Deputy Minister of Science and Technology of Viet Nam, Tran Quoc Khanh. Dr. Zhu is a Professor at the University of Science and Technology of China where he researches the fields of nanomaterials and specifically new carbon materials. His publications have been widely cited and his research with other APEC scientists has been applied in large-scale production of graphene materials.



#### **2016: Technologies for Food Security**

Dr. Hua Kuang of China was awarded the 2016 ASPIRE Prize in Lima by Dr. Gisella Orjeda, President of the Peruvian National Council for Science, Technology and Technological Innovative (CONCYTEC). Dr. Kuang is a Professor at Jiangnan University's School of Food Science and Technology in Wuxi, China, where she works with researchers in other APEC economies to develop low-cost biosensors that detect food sanitation hazards. Her patented technologies have been used to improve food safety for millions in China and elsewhere.



#### **2015: Disaster Risk Reduction: Understanding the Role of Climate Change and Variability**

Dr. Jong-Seong Kug of Korea was awarded the 2015 ASPIRE Prize in Manila by Secretary Mario Montejo of the Philippine Department of Science and Technology. Dr. Kug is an Associate Professor at Pohang University of Science and Technology's School of Environmental Science and Engineering in Korea, and his El Niño prediction model has helped the Korea Meteorological Administration better understand tropical climate dynamics, and forecast and track extreme weather—an area that addressed Philippines' theme of "Disaster Risk Reduction: Understanding the Role of Climate Change and Variability."



#### **2014: Intelligent Transportation**

Dr. Agachai Sumalee, a Thai professor at the Hong Kong Polytechnic University, was awarded the 2014 ASPIRE Prize by Cai Jianlin, China's Vice Minister of Science and Technology. China selected the theme of "Intelligent Transportation" to reflect China's interest in facilitating green and sustainable growth, environmental protection and low-carbon economies. Dr. Sumalee designed a model in collaboration with researchers from across the APEC region that allows highway managers to predict traffic conditions and prevent congestion. This led to ground breaking road traffic management system that slashed commuting times in the greater Bangkok area.



### 2013: Sustainable Ocean Development

In 2013 the ASPIRE Prize was awarded by Gusti M. Hatta, Indonesia's Minister of Research and Technology, to Dr. Carissa Klein of Australia. Dr. Klein's research with the University of Queensland uniquely addressed the 2013 ASPIRE nominating theme of "sustainable ocean development" by striking a balance between biodiversity conservation and socioeconomic viability. Her work has helped two APEC member economies—Malaysia and the United States—sustainably zone the ocean for fishing and conservation.



### 2012: Health Innovation

Dr. Rossa Wai Kwun Chiu of Hong Kong, China was awarded the 2012 ASPIRE Prize. Russia selected "health innovation" as its ASPIRE nominating theme, building on its desire that APEC actively foster cooperation among economies in major innovation areas, such as human health, to support healthy lifestyles, productivity and economic growth. Dr. Chiu's groundbreaking research and innovations in chemical pathology has brought non-invasive prenatal diagnosis of fetal genetic diseases into routine clinical use around the world.



### 2011: Green Growth

In 2011 the ASPIRE Prize was awarded by Nobel Laureate and U.S. Secretary of Energy Steven Chu to Dr. Ali Javey of the United States. The United States selected "green growth" as its ASPIRE nominating theme, building on its desire that APEC actively promote environmentally sustainable economic growth and development, and help our economies successfully transition to a clean energy future. Dr. Javey's innovative work with nanomaterials has made great strides in developing a new generation of solar energy technology and reducing energy consumption in "green electronics."



**Enclosures**

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## ASPIRE 2022 Selection Process & Key Dates

ACTIONS	SUPPORTING DOCUMENTS IN PACKET	DATE
<p><b>EACH APEC ECONOMY SEEKS LOCAL NOMINATIONS</b></p> <p>Each APEC member economy, through its PPSTI representative, is requested to seek nominations from within his or her economy in order to determine one nominee per member economy. It is recommended that nominations be actively solicited from top educational and research institutions within the economy.</p> <p><b>Example local nomination process:</b></p> <p><b>Step 1—Seek Local Nominations:</b> PPSTI representative to send <i>Nomination Form</i> and accompanying <i>Letter to Local Educational and Research Institutions</i> requesting them to publicize/promote the ASPIRE Prize through a call-for-nominations. Local competitions held by prominent institutions to publicize/promote the ASPIRE prize are highly encouraged.</p> <p><b>Step 2—Establish Peer Review Panel to Select Economy’s One Nominee:</b> PPSTI representative to receive completed local nomination applications (completed <i>Nomination Forms</i>) and establish a panel to judge the applications and select one nominee.</p>	<p><b>Step 1 documents</b></p> <ul style="list-style-type: none"> <li>• Nomination Form</li> <li>• Letter to Local Educational and Research Institutions</li> </ul> <p><b>Step 2 documents</b></p> <ul style="list-style-type: none"> <li>• Example Applicant Review Sheet</li> </ul>	<p><b>Step 1 Suggested Timing: Early March</b></p> <p><b>Step 2 Suggested Deadline: Mid April</b></p>
<p><b>EACH APEC ECONOMY SUBMITS ONE NOMINEE</b></p> <p>Each APEC member economy submits <u>one nominee</u> to represent his/her economy for the 2022 ASPIRE Prize. Submissions are made via e-mail <u>before May 27 17:30 (Singapore time)</u> to PPSTI Program Director, Piang-or (<a href="mailto:pw@appec.org">pw@appec.org</a>) and <a href="mailto:kk@appec.org">kk@appec.org</a>. The submission should include 1) The nominee’s <i>Nomination Form</i>; 2) the <i>Member Economy Nomination Cover Letter</i></p>	<ul style="list-style-type: none"> <li>• Nomination Form</li> <li>• Member Economy Nomination Cover Letter</li> </ul>	<p><b>Deadline: 27 May</b></p>



ACTION	DATE
<p><b>PPSTI PROGRAM DIRECTOR SENDS PROFILES TO PPSTI REPRESENTATIVES</b></p> <p>The PPSTI Program Director will collate the nominations received from each member economy and distribute them to PPSTI members for ranking.</p> <p>Sponsors shall provide Scopus profiles, as available, for each economies' nominee to assist PPSTI members in their ranking.</p>	<p><b>By: 13 June</b></p>
<p><b>APEC ECONOMIES RANK NOMINEES AND SUBMIT SELECTION BALLOT</b></p> <p>Each APEC member economy, through its PPSTI representative, is requested to rank the nominees and submit a selection ballot to the PPSTI Program Director by <u>11 July 17:30 (Singapore time)</u>.</p>	<p><b><u>Deadline:</u></b> <b><u>11 July</u></b></p>
<p><b>PPSTI PROGRAM DIRECTOR COMPILES SELECTION BALLOT</b></p> <p>The PPSTI Program Director shall compile and forward the results and the completed selection ballots to the PPSTI Chair to confirm the winner.</p> <p><i>*In case of a tie, the PPSTI Chair will determine the winner.</i></p>	<p><b>By: 14 July</b></p>
<p><b>NOTIFY PPSTI MEMBERS OF 2022 ASPIRE WINNER</b></p> <p>The PPSTI Chair and the ASPIRE sponsors jointly notify PPSTI members of the 2022 ASPIRE winner.</p>	<p><b>By: 20 July</b></p>
<p><b>NOTIFY 2022 ASPIRE WINNER</b></p> <p>The PPSTI Chair and the ASPIRE sponsors jointly notify the 2022 ASPIRE winner.</p>	<p><b>By: 25 July</b></p>
<p><b>AWARD CEREMONY</b></p> <p>The winner of the 2022 ASPIRE Prize is recognized at an award ceremony during the PPSTI meeting hosted by Thailand.</p>	<p><b>August TBD</b></p>





# **2022 APEC Science Prize for Innovation, Research and Education**

## **LOCAL NOMINATION FORM FOR THE RUSSIAN FEDERATION**

**DUE DATE: 25 APRIL 2022**



## ASPIRE 2022 Letter to Local Educational and Research Institutions

Dear [NAME]:

It is with great enthusiasm that we announce that nominations are being sought to represent [INSERT ECONOMY] for the 2022 APEC Science Prize for Innovation, Research and Education (ASPIRE Prize). Sponsored by Wiley and Elsevier, two of the world's leading publishers of scholarly scientific knowledge, the ASPIRE Prize is an annual award that recognizes young scientists who have demonstrated a commitment to both excellence in scientific research and cooperation with scientists from other APEC member economies.

[INSERT ECONOMY] may nominate one young scientist from [INSERT ECONOMY] under the age of 40 to be considered for the 2022 ASPIRE Prize. These finalists will then be considered by the full APEC Policy Partnership for Science, Technology, and Innovation (PPSTI) for selection as the 2022 ASPIRE Prize winner, with prize money in the amount of \$25,000 USD. We encourage your institution to use the enclosed "NOMINATION FORM" to send us distinguished young scientists for consideration by [DATE - SUGGEST MID APRIL DEADLINE].

Each year the APEC host economy is asked to provide a theme to guide nominations for the ASPIRE Prize to be awarded in their host year. For its host year of 2022, Thailand selects "Innovation to achieve economic, environmental, and social goals" as the ASPIRE nominating theme.

Nominees should demonstrate a commitment to excellence in scientific research and cooperation with scientists from other APEC member economies, including inclusive and interdisciplinary collaborations, in subjects such as: biology, chemistry, environmental science, physics, mathematics, economics, social sciences and other relevant fields.

We thank you for your institution's contributions to the APEC region's scientific community and look forward to reviewing your nominees.

Best regards,

**Ms. Yang Xuemei**  
PPSTI Chair  
Ministry of Science and  
Technology (MOST)

**Ms. CJ Hwu**  
Director, Strategic Partnerships &  
Government Affairs  
Asia Pacific  
Wiley  
ASPIRE Prize Sponsor

**Dr. Anders Karlsson**  
Vice President, Global Strategic  
Networks, Asia Pacific  
Elsevier  
ASPIRE Prize Sponsor



## ASPIRE 2022 Nomination Form

**INSTRUCTIONS:** Thank you for your interest in being selected to represent the Russian Federation for the 2022 ASPIRE Prize. Please send all required documents below and submit to: Kristina Dovmalyan, [dovmalyankg@minobrnauki.gov.ru](mailto:dovmalyankg@minobrnauki.gov.ru)

### REQUIRED DOCUMENTS:

- 1) Nomination form;
- 2) Nominee's Curriculum Vitae;
- 3) One letter of recommendation for consideration;
- 4) A photo of nominee (image must be larger than 250\*300 pixels)

**THE DEADLINE IS: 25 APRIL 2022**

<b>SECTION 1 OF 5 - Nomination Statement (up to 300 words):</b> Please describe how the nominee has demonstrated excellence in scientific research in the field of "Innovation to achieve economic, environmental, and social goals" and cooperation with scientists from other APEC member economies. Please also include 1-3 "tweets" that could be published on Twitter summarizing the nominee's research.	
<b>SECTION 2 OF 5 - Nominee Information</b>	
Member Economy:	
Last Name:	First Name:
Date of Birth (day/month/year):	
Address:	
Telephone:	Email:
Title:	
Institution/Affiliation:	



Field of Research:

**SECTION 3 OF 5 - List of Peer Reviewed Scholarly Publications:** Please list the nominee's peer reviewed publications (publication titles should be translated into English). The nominee's record of scholarly publication will be evaluated on its merits, and nominees are encouraged to include publications regardless of the publisher. Please continue onto separate page if necessary.

*Please denote which scholarly publications include co-authors from APEC member economies, for example:*

1. A.S. Barnard, H. Konishi, H. Xu, 'Morphology mapping of platinum catalysts over the entire nanoscale', *Catal. Sci. & Tech.* (2011) accepted [**APEC Authors**]
2. H. Guo, A.S. Barnard, 'Computational challenges in accurate modeling of iron oxides and oxyhydroxides, and the prediction of environmentally sensitive phase transformations', *Phys. Rev. B*, 83 (2011) 094112
3. L.Y. Chang, E. Osawa, A.S. Barnard, 'Confirmation of the electrostatic self-assembly of nanodiamonds', *Nanoscale*, 3 (2011) 958 [**APEC Authors**]

**SECTION 4 OF 5 - Other Awards/Achievements/Contributions to market-led innovations:** Please list below in English; please continue onto separate page if necessary.

*Please denote which, if applicable, have a connection to other APEC member economies.*



<b>SECTION 5 OF 5 – Local Nominator Information (If Nomination Form is submitted by the nominee himself or herself, do not fill out this section)</b>	
Last Name:	First Name:
Telephone:	Email:
Relation to Nominee (if any):	
Title:	
Institution/Affiliation:	
Nominator Signature (typed):	

**Remember to include the following attachments along with this Nomination Form:**

- **Nominee’s Curriculum Vitae**
- **One letter of recommendation**
- **Photo of nominee (image must be larger than 250\*300 pixels):**



## ASPIRE 2022 Example Applicant Review Sheet

Candidate Name:

Nominating Institution:

TOTAL SCORE:

Candidate meets eligibility requirements:

- Yes, candidate will be under the age of 40 as of December 31, 2022.
- Yes, candidate is a citizen of an APEC economy.

**Criteria 1: Excellence in scientific research as evidenced by scholarly publication (10 being the highest and 1 being the lowest)**

1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○	8 ○	9 ○	10 ○
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Comments:

**Criteria 2: Cooperation with scientists from other APEC member economies**

1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○	8 ○	9 ○	10 ○
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Comments:

**Criteria 3: Contribution to this year's theme of "Innovation to achieve economic, environmental, and social goals"**

1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○	8 ○	9 ○	10 ○
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Comments: