

SKLMP NEWSLETTER

VOL. 3
AUG 2022



Soft coral reefs and fishes in Red Sea. Photo by: Mr. Baian Lin

Director's message

Dear Friends, Colleagues and Students,

Listening to the words of a wise man can be superior to studying ten years of books. — Chinese Proverb
聽君一席話，勝讀十年書。 — 中國諺語

Over the past six months, we have accomplished a number of milestones. First, we successfully organized the 3rd International Workshop on Eco-shoreline Designs for Sustainable Coastal Development and the 2nd International Conference on Biodiversity, Ecology and Conservation of Marine Ecosystems (BECoME) in January 2022. Second, we have launched the SKLMP Distinguished Lecture Series in which our research students, staff and members can be inspired by the renowned researchers such as Professor Jerald Schnoor and Professor Jenny Stauber, and interact with them. Third, our research student and postdoc have marvellously created a startup company called *AfterNature* that has secured seeding funding from the TECH-300 Programme of CityU and the Ideation Programme of the Hong Kong Science and Technology Parks Cooperation. Apart from providing consultancy services, *AfterNature* will create and commercialize novel eco-engineered infrastructures for promoting marine biodiversity on artificial seawalls. Fourth, SKLMP has been strengthening collaboration with the Partnership in Environmental Management for the Seas of East Asia (PEMSEA), and conferred as a PEMSEA Regional Centre of Excellence in Marine Pollution. While fostering international collaboration, we will play a key role in provision of training on pollution monitoring and assessment, as well as underwater research and ecological restoration in the region. I hope you enjoy reading this newsletter, and learn more about our recent research discoveries, achievements and activities of SKLMP.

Kenneth Leung

Director of SKLMP
August 2022



Activities

BECoME-2022

The 2nd International Conference on Biodiversity, Ecology and Conservation of Marine Ecosystems (BECoME-2022) was successfully organised by SKLMP and CityU Department of Chemistry on 3-7 January 2022 at CityU in hybrid mode. BECoME-2022 had gathered over 340 participants from 33 countries, with 184 invited talks, oral and short presentations, and three workshops on Eco-shoreline Designs, Stable Isotope Application, and Marine Spatial Planning. The presentations stimulated discussions, advanced research ideas, and triggered collaborations to foster capacity building. We are also grateful for the support from SKLMP members, speakers, the ECF and Croucher Foundation, and all participants for making BECoME-2022 a fruitful conference.



The Dean of CityU College of Science, Prof. Chun Sing Lee, delivering the opening speech for the Eco-shoreline Workshop at BECoME-2022.



Officiating guests of the Eco-shoreline Workshop at BECoME-2022. Photo shows (from left): Head of Civil Engineering Office, Mr. Jacky Kwok Yuen Wu; Dean of College of Science, Prof. Chun Sing Lee; Permanent Secretary for Development (Works), Mr. Ricky Chu Kit Lau; Director of the SKLMP, Prof. Kenneth Leung; Department Head of Civil Engineering Office (Port & Land), Mr. Ricky Chi Pan Wong, and Associate Director of SKLMP, Dr. Leo Chan.



Officiating guests of the BECoME-2022 opening ceremony. Photo shows (from left): Director of the SKLMP, Prof. Kenneth Leung; Director of Agriculture, Fisheries and Conservation, Dr. Siu Fai Leung; CityU Vice-President (Research & Technology), Prof. Michael Mengsu Yang, and Advisor of the Hong Kong Education University (Environmental Science), Prof. Rudolf Wu.

Eco-shoreline Workshop

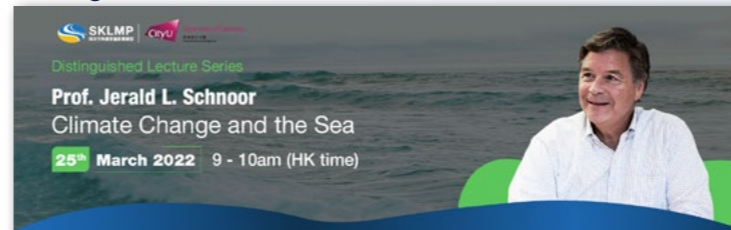
The 3rd International Workshop on Eco-shoreline Designs for Sustainable Coastal Development was held at BECoME-2022 on 3 January 2021 at CityU and online via Zoom. 12 invited lectures were delivered by speakers from diverse expertise ranging from civil engineering to marine ecology to: (1) update latest progress of the design and implementation of eco-engineered shoreline around the world; (2) jointly review latest results of eco-engineered fixtures trials in Hong Kong, and (3) refine a practical guideline for the design, production, and installation of eco-engineered fixtures. The guideline would serve as a useful reference for future eco-shoreline projects worldwide.



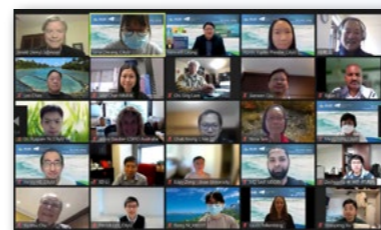
Distinguished lecture series

Distinguished lecture series aims to invite renowned scientists from around the world to share their latest research, experience and wisdom with students and members of SKLMP and CHEM, have intellectual exchange and develop collaboration. The lecture series is co-organised by the SKLMP and Department of Chemistry (CHEM) of City University of Hong Kong.

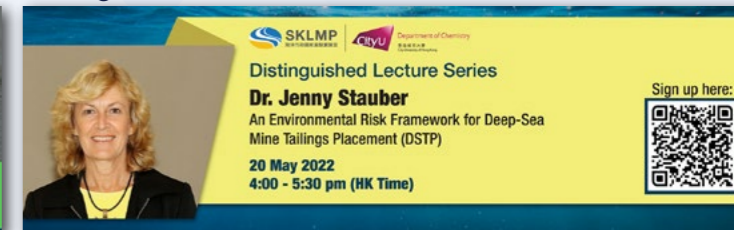
Distinguished lecture 1



Professor Jerald Schnoor, as our first honourable speaker, gave a talk on "Climate Change and the Sea" on 25 March 2022. More than 100 audiences in total attended his inspiring talk. Professor Schnoor is the Allen S. Henry Chair in Engineering at the University of Iowa and a member of the National Academy of Engineering in the United States. Professor Schnoor served as Editor-in-Chief of *Environmental Science & Technology* during 2002-2014, and as the founding Editor-in-Chief of *ES&T Letters* during 2012-2014.



Distinguished lecture 2

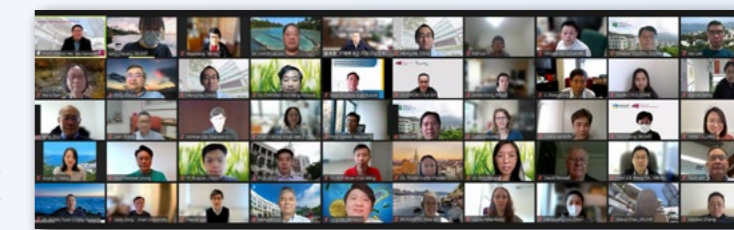


Professor Jenny Stauber gave a talk on "An Environmental Risk Framework for Deep-Sea Mine Tailings Placement (DSTP)" on 20 May 2022. More than 40 audiences in total attended her great talk. Professor Stauber is a Chief Research Scientist at CSIRO Land and Water in Australia, as well as Adjunct Professor at La Trobe University and Visiting Professor at South China Normal University. Professor Stauber chairs and serves on a large number of expert advisory panels to the Australian government and the global mining industry. She is a Fellow of both the Australian Academy of Science and the Australian Academy of Technology and Engineering, as well as a SETAC Fellow.



SKLMP 2021 Annual and Academic Committee Meeting

The SKLMP 2021 Annual Meeting was successfully held on April 7, 2022. There were twelve presentations on collaborative research projects which were funded by SKLMP. The SKLMP 2021 Academic Committee Meeting was held after the presentation. Prof. Minhan Dai, as a Chairman of Academic Committee, delivered an inspiring opening speech. Afterwards, Prof. Kenneth Leung gave the SKLMP Director's Report. This annual meeting concluded and highlighted the achievement and accomplishment of SKLMP in the 2021, and received many constructive comments and feedbacks from the academic advisors. We sincerely thank the wonderful support from all members and academic advisors of SKLMP.



Meet our team



Dr. Mengyang LIU
Postdoc at SKLMP

Mengyang's research focuses on the source, transport, and fate of anthropogenic pollutants in marine environments. She is currently working on the physical-biogeochemical coupling effects of marine organic pollutants in particular polycyclic aromatic hydrocarbons, and their association with energy policy and carbon neutrality.



Miss Qiong LUO
PhD Student at Department of Chemistry, CityU

Qiong's PhD study focuses on the analysis and characterisation of emerging organic contaminants (e.g. pharmaceuticals and endocrine disrupting chemicals), and their potential risk assessment on the marine environment and human health. She has been participating in the UN-endorsed Global Estuaries Monitoring Programme which is led by SKLMP under the UN Decade of Ocean Science for Sustainable Development (2021-2030).

Miss Yan JIANG
Research Assistant at SKLMP

Miss Jiang's research interests include fishery stock assessment, fish biology and marine biodiversity. She is currently conducting fishery studies regarding the diversity of juvenile fish and adult fish in Hong Kong waters. From September 2022, she will become a PhD student at SKLMP to investigate the occurrence and ecological risk of organotin contaminants in Hong Kong and the Greater Bay Area, and test if the legislation and law enforcement can effectively reduce their contamination.



Mr. John Patrick TEREZINI
Research Assistant at SKLMP

John received a MSc degree in Environmental Management from the University of Hong Kong. At SKLMP, John serves as a member in the Eco-shoreline research team, and is examining biodiversity changes after the installation of oyster shell reefs in Sham Wan, Lamma island. He also runs the Hong Kong Jellyfish Project to look at jellyfish diversity in local waters.



New members



Dr. Jianlin CHEN
Assistant Professor
 Department of Science, School of Science and Technology, HKMU
Expertise:
 Biosensor design, Wastewater treatment, Green chemistry



Prof. Fred Wnag Fat LEE
Head of Science cum Professor
 Department of Science, School of Science and Technology, HKMU
Expertise:
 Coastal wetland, Harmful algal blooms, Marine toxicology, Proteomics

Research highlights

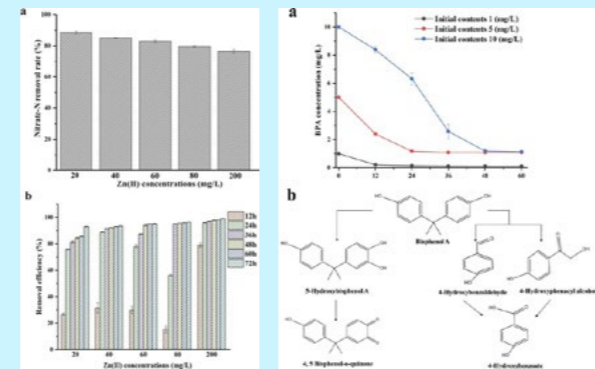


Dr. Pei HONG
 Visiting scholar,
 SKLMP, CityU

Application of aerobic denitrifier for simultaneous removal of nitrogen, zinc, and bisphenol A from wastewater

Bioresour Technol, 354, 127192 (2022). (Impact Factor: 11.889)

High concentrations of heavy metals and other pollutants affect microbial activity in the wastewater treatment system and impede biological denitrification process. A novel Zn(II)-resistant aerobic denitrifier (*Pseudomonas stutzeri* KY-37) was isolated with potential in biodegradation and removal of Bisphenol A (BPA). Its capability in concurrent removal of nitrogen, zinc, and BPA was tested. Nitrogen removal efficiency achieved 98.5% in 12h. Zn(II) removal efficiency reached more than 95%, while the maximum BPA removal efficiency reached 88.8%. Mechanisms of BPA removal included microbial degradation and adsorption on extracellular polymeric substances.



[Read Online](https://doi.org/10.1016/j.biortech.2022.127192) → <https://doi.org/10.1016/j.biortech.2022.127192>



Prof. Kenneth LEUNG
 Director,
 SKLMP, CityU

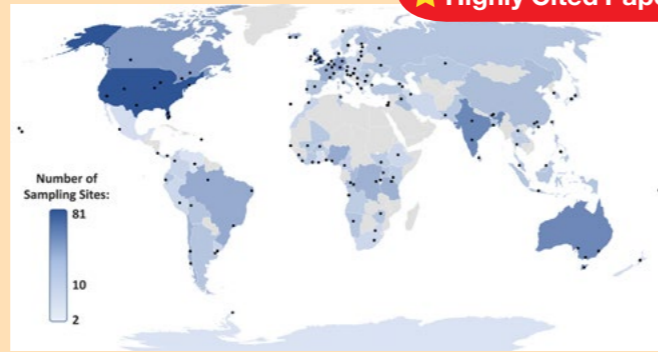


Dr. Racliffe LAI
 Postdoc,
 SKLMP, CityU

Pharmaceutical pollution of the world's rivers

Proceedings of the National Academy of Sciences of the USA, 119(8), e2113947119 (2022). (Impact Factor: 12.779)

Despite growing evidence of the deleterious effects on ecological and human health, little is known regarding the global occurrence of pharmaceuticals in rivers. Studies assessing their occurrence are only available for 75 of 196 countries, with most research conducted in North America and Western Europe. This leaves large geographical regions relatively unstudied. Here, we present the findings of a global reconnaissance of pharmaceutical pollution in rivers. The study monitored 1,052 sampling sites along 258 rivers in 104 countries of all continents, thus representing the pharmaceutical fingerprint of 471.4 million people. We show that the presence of these contaminants in surface water poses a threat to environmental and human health in more than a quarter of the studied locations globally.



Highly Cited Paper

[Read Online](https://doi.org/10.1073/pnas.2113947119) → <https://doi.org/10.1073/pnas.2113947119>



Dr. Moriaki YASUHARA
 Associate Professor,
 School of Biological Sciences, HKU

Paleobiology provides glimpses of future ocean

Science, 375(6576), 25-26 (2022). (Impact Factor: 63.798)

Based on observations in paleobiology studies, it is predicted that a warming and deoxygenating ocean will make species smaller and push them from the tropical zone to the temperate zone, from the temperate zone to the polar zone, and from the polar zone to extinction, resulting in a loss of biodiversity in the tropics and higher biodiversity in higher latitudes. This domino effect of species displacements leads to the prediction that warming may reduce tropical diversity while causing extinction for polar endemic species. Thus, a warmer future will alter ecological communities in tropical oceans, which disproportionately affect developing countries, where the reliance on small-scale fishing is especially high.



[Read Online](https://doi.org/10.1126/science.abn2384) → <https://doi.org/10.1126/science.abn2384>

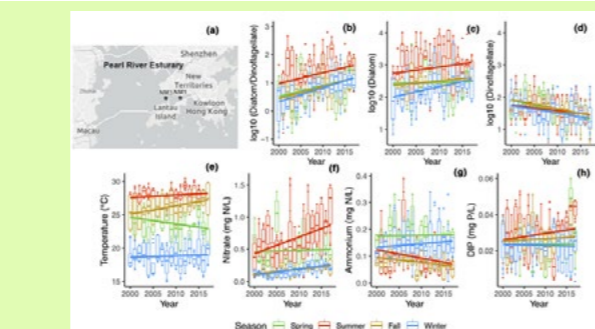


Prof. Hongbin LIU
 Chair Professor,
 Department of Ocean Science, HKUST

Distinct interaction effects of warming and anthropogenic input on diatoms and dinoflagellates in an urbanized estuarine ecosystem

Global Change Biology, 27(15), 3463-3473 (2021). (Impact Factor: 13.211)

From 1999 to 2017, the proportion of diatoms and dinoflagellates in Pearl River Estuary almost doubled. The increase in diatoms is not due to the improvement of water quality, but because human activities in the pearl river estuary have changed the temperature and nutrients of seawater and affected the growth of algae. Not all diatoms are harmless to marine organisms, and some diatoms are even harmful to the nerves of marine mammals and birds. Therefore, algal bloom is a major environmental issue, and the research findings can help predict and even prevent the occurrence of algal blooms.



[Read Online](https://doi.org/10.1111/gcb.15667) → <https://doi.org/10.1111/gcb.15667>

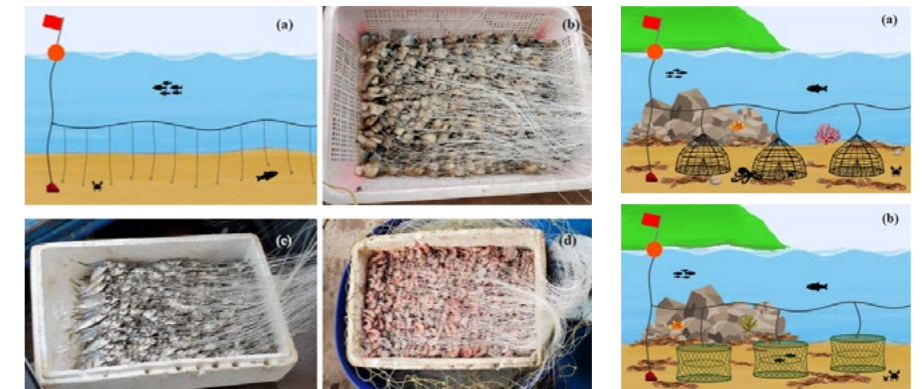
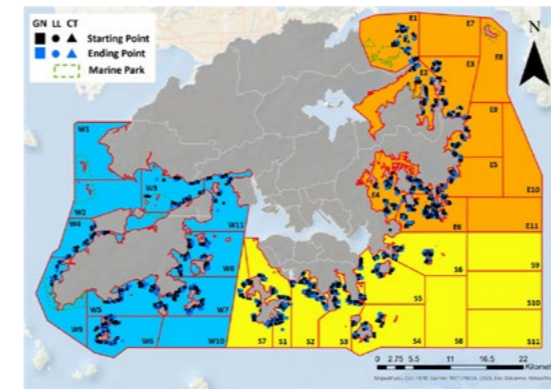
Fisheries studies



SKLMP endeavours to support the Hong Kong SAR Government on environmental, fisheries and conservation management. In recent years, we have been carrying out a number of research projects related to fisheries resource management for the Agriculture, Fisheries and Conservation Department (AFCD). Herein, we introduce two of the on-going projects.

Development of options for a fisheries monitoring programme in Hong Kong

The focus of this \$4.8m Consultancy Study is to develop options for a territory-wide and continuous fisheries-independent monitoring programme for Hong Kong (i.e. collection of data by scientific sampling independent of commercial fishing activity). Based on the results of this comprehensive study, we will recommend options for a locally suitable monitoring programme that can be cost-effective while maintaining data quality.



Finding nursery sites for juvenile fish in Hong Kong coastal habitats

Juveniles are an important part of the fish life cycle. Most marine fish will stay in nearshore nurseries during their larval and early juvenile stages. Therefore, identifying the main nurseries ground for juveniles plays a vital role in protecting and restoring fish populations. The nearshore marine habitats, such as mangroves, seagrass beds, seaweed beds and coral reefs, with shelter functions and abundant food which are preferred for juveniles' nursery. Through the investigation and research of juvenile fish resources in different habitats, we can grasp the distribution status of juvenile fish resources in different habitats near the coast of Hong Kong, and provide scientific support for the protection and management of juvenile fish in the future.

With the support of AFCD, we have been investigating the juvenile fish resource in seagrass beds, mangroves, and seasonal Sargasso bed since 2019 (Fig. 1) using four survey methods, namely trap, night light trap, purse seine and beach seine (Fig. 2). Additionally, we have been conducting surveys of juvenile fish resources in the Port Shelter of Sai Kung in Hong Kong since 2021.

The preliminary findings show that juvenile fishes are abundant in marine parks and protected areas (Fig. 3), and some unique fish species that are rarely found outside the protected areas. The study also observes that seasonal Sargassum bed is an important nursery ground for fishes. In future marine fish surveys, we will also try to apply a variety of new methods such as environmental DNA in the monitoring.

Figure 1

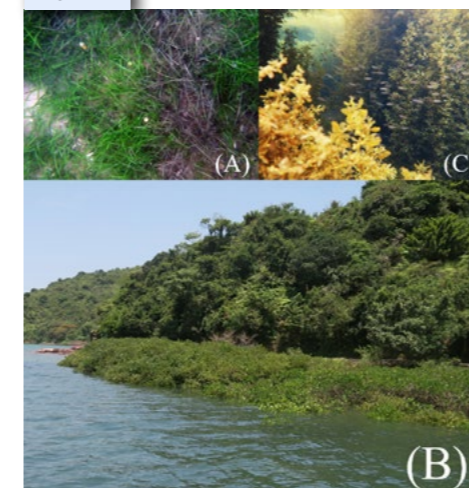


Figure 2

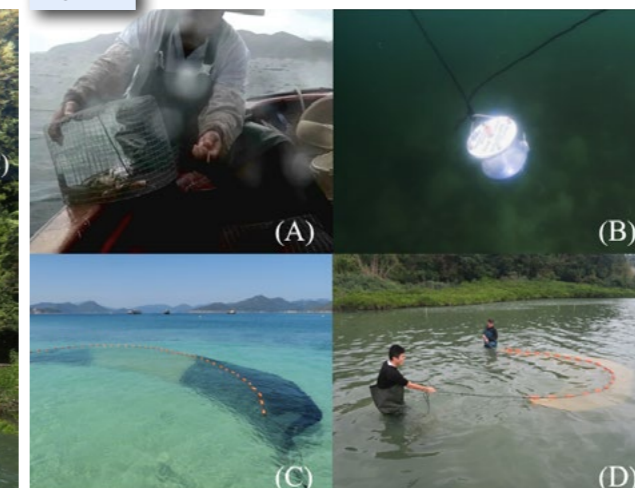


Figure 3



SKLMP Outstanding Research Output Prizes 2021

The 2nd SKLMP Outstanding Research Output Prizes (2021) have been carefully selected by our adjudicator, Professor Bingsheng Zhou of Institute of Hydrology, CAS. There are three winners.

Dr. Yuanyuan Hong, a postdoc of Dr. Moriaki Yasuhara, was awarded **Professor Paul Lam's Postdoctoral Researcher Output Prize** for her publication in *Anthropocene* entitled "Ecosystem turnover in an urbanized subtropical seascape driven by climate and pollution". Using microfossils of ostracods as bioindicators, she found changes in freshwater and sediment discharge from the Pearl River and metal pollution could significantly affect the turnover of species in Hong Kong's marine environment. The interesting study was widely reported by domestic and global media.

There were two awardees for **Professor Rudolf Wu's Research Postgraduate Output Prize (RPOP)**. One RPOP goes to **Miss Jiain Sun**, a PhD student of Dr. Henry He, for her timely publication in *Environmental Science & Technology Letters* entitled "Release of microplastics from discarded surgical masks

and their adverse impacts on the marine copepod *Tigriopus japonicus*". Her study showed the release of microplastics from surgical masks could enter the coastal ecosystem and cause reproduction impairment in the copepod. This important study was well covered by local and overseas media.

Another RPOP was awarded to **Mr. Jiaji Sun**, a PhD student of Dr. Ruquan Ye, for his highly cited publication in the prestigious journal *Energy & Environmental Science*, entitled "Building a stable cationic molecule/electrode interface for highly efficient and durable CO₂ reduction at an industrially relevant current". He developed a strategy to convert CO₂ into valuable chemicals with improved conversion efficiency and reduced energy cost. His work is vital to mitigate carbon emission and attain carbon neutrality worldwide.

Let's congratulate the three winners, and sincerely thank Professor Zhou for his time and effort in evaluating all of the nominations.



Dr. Yuanyuan Hong



Miss Jiain Sun



Mr. Jiaji Sun



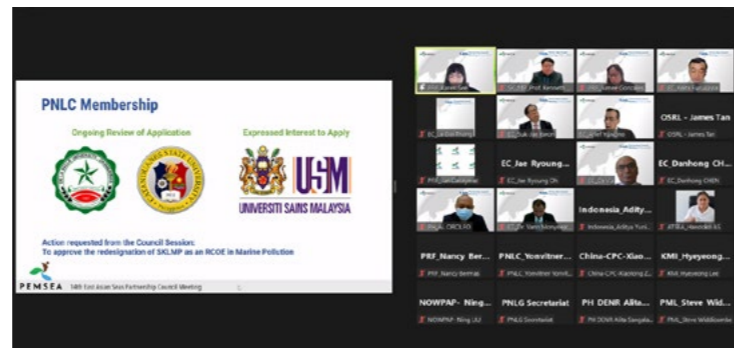
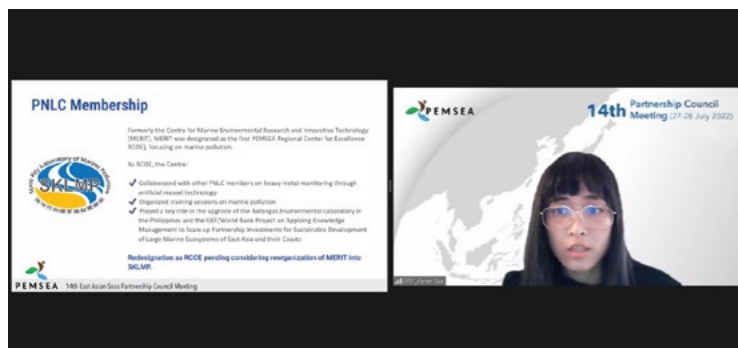
SKLMP is conferred as a Regional Centre of Excellence (RCOE)



PEMSEA

On 27 July 2022, the Partnership Council of the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) officially endorsed SKLMP as an RCOE in Marine Pollution. As a PEMSEA-RCOE, SKLMP automatically becomes a member of the PEMSEA Network of Learning Centres (PNLC), and will regularly organize training opportunities for people in the region regarding pollution monitoring and assessment, underwater survey and ecological restoration technologies.

PEMSEA is an intergovernmental organization operating in East Asia with a mission to foster and sustain healthy and resilient coasts and oceans, communities and economies in the region through integrated management solutions and partnerships. Together with SKLMP, there are four PEMSEA-RCOEs which focus on building capacities, sharing knowledge and providing scientific inputs to policies, programmes and projects that are aimed to enhance the health and resilience of the Seas of East Asia.



News updates

Seminars in ET&C (Environmental Toxicology and Chemistry)

To enhance research communication, collaboration and generate innovative ideas, Prof. Wenxiong Wang (Chair Professor at CityU and our founding member of SKLMP) launched the "Environmental Toxicology and Chemistry Seminar Series". The seminars target to inspire participants to create valuable scientific questions, develop innovative methodologies, and apply state-of-the-art scientific instrumentation in research. It may facilitate seeking more funding opportunities through effective communication and research collaboration. It may also help tackle big science questions through innovative, large-scale and complex research by involving more people and brainstorming. The first seminar was held on 27 May 2022 with Prof. Wang as the first speaker. He talked about *Bioimaging in Toxicology Research*.



Top 100,000 scientists in the world



Congratulations to eighteen members of SKLMP have been selected as "Top 100,000 scientists in the world" by the Global Scholars Database. The ranking is obtained from advanced AI technique through scholar literature collection, processing and calculation based on all disciplines around the world.

Prof. Kenneth Leung elected as a Fellow of the Royal Societies of Biology and Chemistry

Congratulations to Prof. Kenneth Leung, our Director of SKLMP for being recently elected as a Fellow of the Royal Society of Chemistry, and a Fellow of the Royal Society of Biology for his outstanding achievements in research of marine pollution, ecotoxicology, marine ecology, and ecological restoration as well as education and community services. For instance, he is actively supporting the Hong Kong SAR Government in environmental management through serving on various advisory committees (e.g. the Chairman of the Advisory Council on Food and Environmental Hygiene, the Chairman of the Lantau Conservation Fund Advisory Committee, and a Member of the Advisory Council on the Environment).



Prof. Xiangdong Li won the 2022 Clair C. Patterson Award

Congratulations to Prof. Xiangdong Li, our founding member of SKLMP, for winning the 2022 Clair C. Patterson Award. The award is offered by the Geochemical Society, with only one recipient per year. The award is in recognition of Professor Li's innovative breakthroughs in environmental geochemistry, including regional environmental pollution, urban air PM_{2.5} pollution, and bacterial resistance origin and spread.

Dr. Moriaki Yasuhara won the W.S. Cooper Award

Congratulations to Dr. Moriaki Yasuhara, a member of SKLMP, for winning the prestigious W.S. Cooper Award of the Ecological Society of America. The Award is given to the authors who have an outstanding publication in the field of geobotany, physiographic ecology, plant succession, or the distribution of plants along environmental gradients.



AfterNature is accepted by CityU as one of the "HK Tech 300" startups

Translational research is a core mission of SKLMP. We encourage our young researchers and alumni to create startup companies to apply our research results to benefit the environment and mankind. *AfterNature* is a startup created by our postdoc (Dr. Juan Carlos Astudillo) and PhD student (Thea Broadford), and dedicated to developing ecologically engineered solutions to enhance biodiversity and ecosystem functioning of artificial shorelines and degraded habitats. Their innovative eco-engineered concrete features efficiently increase surface area and create microhabitats suitable for various intertidal and subtidal species to inhabit artificial seawalls. *AfterNature* products make use of locally produced waste material to reduce the carbon footprint and promote sustainability. Apart from production and commercialisation of novel eco-engineered fixtures for biodiversity enhancement, *AfterNature* also provide professional consultancy services on the design and construction of eco-shorelines. *AfterNature* has secured seeding funding from the TECH-300 Programme of CityU and the Ideation Programme of the Hong Kong Science and Technology Parks Cooperation.

Call for contributions

To better capture the news, updates and great work of the SKLMP members and community, we are now calling for contributions for the next issue of our newsletter. Please email us your contributions (up to 100 words) to sklmp.info@cityu.edu.hk by 30 November 2022. Ideas of contributions include your new publications or projects, received awards, and conferences or meetings that are of particular interest to the SKLMP members. We look forward to your contributions!

