

SKLMP NEWSLETTER

VOL. 2
DEC 2021



Director's message

Dear Friends, Colleagues and Students,

“《論語》：「三人行，必有我師焉；擇其善者而從之，其不善者而改之」
《Confucian Analects》：When three are walking together, there must be a teacher.
I will choose their good qualities and follow them, while improving the bad ones.”

I hope that this festival season brings happiness, peace and health to you and your loved ones.

First and foremost, I would like to congratulate 20 members of SKLMP who achieved excellence in their field and had been ranked as World's Top 2% Scientists by Stanford University. Your remarkable achievement demonstrates excellence in your respective areas of expertise through outstanding research and is definitely a great asset to SKLMP.

During the past year, many advances and changes have taken place at SKLMP, especially in our ability to communicate with scientists around the globe. Apart from the ten-year "Global Estuaries Monitoring (GEM) Programme" endorsed by the United Nations, we also organised the online Training Workshop on Pollution Assessment and Management, and the online Symposium on Latest Advances in Marine Environmental Research last month, in partnership with PEMSEA (Partnerships in Environmental Management for the Seas of East Asia) as part of the East Asian Seas Congress 2021. These events also paved the way for closer collaboration with PEMSEA and people in the region, offering new opportunities for international collaboration and capacity building.

We were also very pleased to witness the Plaque Unveiling Ceremony for the Qingdao-Hong Kong Marine Environment and Ecology Joint Research Centre which was jointly organised by SKLMP and Ocean University of China via a hybrid mode. This ceremony symbolized stronger ties and closer collaboration in training young researchers and interdisciplinary research between the two regions.

Through cooperation and learning from each other, we will progress and excel together for the betterment of the marine environment.

Kenneth Leung, Director of SKLMP
Dec 2021

Activities

CAS Lab Visit

As part of SKLMP's commitment to knowledge dissemination, we regularly organise lab visits for interested parties and the public. This August, the Commissioner of Civil Aid Service (CAS), Mr Lo Yan-Lai and his delegation visited our lab and learned first-hand about our research on marine animal virtopsy, underwater mapping of coral communities, applications of recycled water from sewage treatment plants, as well as latest research on chemicals of emerging concerns. We had a great time sharing our work with the CAS delegates!



Qingdao-Hong Kong Joint Centre

Qingdao-Hong Kong Marine Environment and Ecology Joint Research Centre has been formally established between Ocean University of China (OUC) and City University of Hong Kong (CityU) since 1st January 2020 for knowledge exchange and research collaboration. Plaque unveiling ceremony of this Joint Research Centre was held on 12th November 2021. More than 50 people from OUC and CityU attended this memorable occasion.



PEMSEA: East Asian Sea Congress 2021, 26th - 27th November 2021

We have successfully organized the online Training Workshop on Pollution Assessment and Management, and the online Symposium on Latest Advances in Marine Environmental Research on 26th-27th November 2021, in partnership with PEMSEA (Partnerships in Environmental Management for the Seas of East Asia) as part of the East Asian Seas Congress 2021. There were over 100 participants joining these two events and many of them came from the East Asia region. These events will pave the way for closer collaboration with PEMSEA and people in the region.



Thank you for joining the book launch!

Thank you all who attended the launch of our 10th Anniversary Book. It meant a lot to us to have your support along this journey. A special thanks to our speakers, Professors Paul Lam and Rudolf Wu, Co-founders of SKLMP; Professors Nora Tam, Dr. Leo Chan, Dr. Apple Chui, Dr. James Fang and Ms Eve Haiying Ma who shared with us their own experiences. We look forward to celebrating more success with you in the future years to come.



New members



Prof. Chak Keung CHAN

Chair Professor of Atmospheric Environment
Dean, School of Energy and Environment, CityU

Expertise:

Aerosol Chemistry, Air Pollution, Raman spectroscopy, Marine aerosols, Aerosol – gas reactions



Dr. Alessandro STOCCHINO

Associate professor
Civil and Environmental Engineering
Department, PolyU

Expertise:

Mass transport and Mixing Processes in geophysical flows, Coastal and Estuarine circulation, Micro-plastic particles transport



Dr. Vincent Chi Chiu KO

Associate Professor

Department of Chemistry, CityU

Expertise:

Luminescence, Photochromism, Chemical Sensors, Photocatalysis, Drug Development



Dr. Jiajun WU

Scientific Officer

SKLMP, CityU

Expertise:

Marine biotoxins and novel detection method, Natural product discovery, Toxicology, Marine dinoflagellate, Marine ecology



Dr. Phoebe Yuefei RUAN

Research Assistant Professor

SKLMP and Department of Chemistry, CityU

Expertise:

Environmental organic analytical chemistry, Emerging chemicals of concern, Environmental risk assessment, Ecotoxicology



Dr. Meng YAN

Scientific Officer

SKLMP, CityU

Expertise:

Ecotoxicology, Molecular biology, Marine fish, Microalgae, Aquaculture

Research highlights



Prof. Wenxiong WANG

Associate Dean & Chair
Professor, School of Energy &
Environment, CityU

Photodynamic control of harmful algal blooms by an ultra-efficient and degradable AIEgen-based photosensitizer

Harmful algal blooms (HABs) have a severe impact on human health, aquatic ecosystems, and the economy. Herein, TVP-A, a positively charged photosensitizer with aggregation-induced emission characteristics is introduced as a super-efficient, cost-effective, and eco-friendly agent for the governance of HABs. TVP-A efficiently harvests white light to generate reactive oxygen species. Due to its positive surface charge, TVP-A has good water solubility and quickly adsorbs onto algal cells floating on the surface of water, triggering algal cell death through oxidative destruction of the nuclei and chloroplasts of algae. TVP-A is effective at low concentrations and requires sunlight irradiation periods of only a few minutes to destroy algal blooms, making it applicable for large scale algal bloom control under most weather conditions. Further, TVP-A is non-toxic to fish, mice or mammalian cells. The slow self-degradation of TVP-A during the photodynamic control of algal blooms prevents environmental accumulation or secondary pollution to ecological systems.

Chem Eng J, 417:127890

[READ ONLINE](#)



Dr. Racliffe Weng Seng LAI

Postdoc,
Department of Chemistry, CityU

Hydrophobic surface coating can reduce toxicity of zinc oxide nanoparticles to the marine copepod *Tigriopus japonicus*

Coated zinc oxide nanoparticles (ZnO-NPs) are more commonly applied in commercial products but current risk assessments mostly focus on bare ZnO-NPs. To investigate the impact of surface coatings, this study examined acute and chronic toxicities of these chemicals toward a marine copepod, *Tigriopus japonicus*. We found bare ZnO-NPs and hydrophobic ZnO-NPs were less toxic than hydrophilic ZnO-NPs. Our results suggest that differences of gene expressions were governed by hydrodynamic size and ion dissolution of the particles. The metadata analysis, together with our test results, further suggested that the toxicity of coated metal-associated nanoparticles could be predicted by the hydrophobicity and density of their surface coatings. This study evidenced the influence of surface coatings on the physicochemical properties, toxicity, and toxic mechanisms of ZnO-NPs, and provided insights into the toxicity prediction of coated nanoparticles from their coating properties to improve their future risk assessment and management.

Environ. Sci. Technol., 55, 10, 6917–6925

[READ ONLINE](#)



Prof. Kenneth Mei Yee LEUNG
Director, SKLMP



Prof. Jianwen QIU
Professor, Department of
Biology, HKBU

Recovery of tropical marine benthos after a trawl ban demonstrates linkage between abiotic and biotic changes

Bottom trawling has been banned in some jurisdictions to mitigate the problems of habitat destruction and overfishing. However, most reports about trawling impacts originate from temperate latitudes, and recovery of macrobenthos from trawl ban has hardly ever been studied in the tropics. In Hong Kong, to facilitate the recovery of fisheries resources and associated benthic ecosystems, the Government implemented a territory-wide trawl ban on December 31, 2012. Comparison of surveys conducted before and at 2.5 years after the ban revealed higher organic contents in sediment and lower suspended-solid loads in water, as well as a significant increase in abundance, species richness, functional diversity and among-site similarity of macrobenthos after the trawl ban. Our results suggest that the imposition of a trawl ban can be an effective measure for biodiversity conservation in the tropics.

Commun. Biol., 4, 212

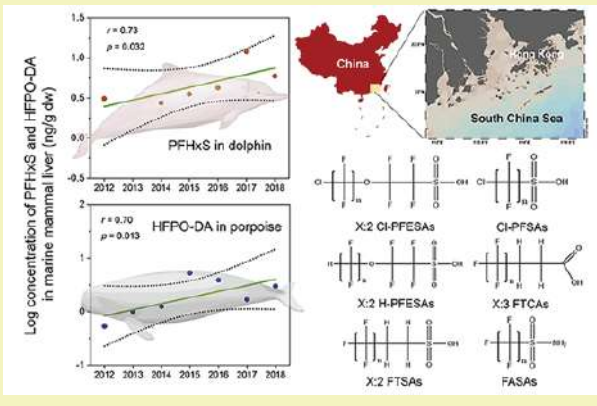
[READ ONLINE](#)

Researches in the Greater Bay Area



The rapid economic and industrial development in the Greater Bay Area (GBA) has aggravated the estuarine pollution in the Pearl River Estuary and the adjacent northern South China Sea, where dozens of legacy pollutants and contaminants of emerging concern (CECs) have been ubiquitously found. However, information about their environmental behaviors in the GBA is far from adequate, making ecological risk assessment an on-going challenge. Here, we would like to showcase our recent research outcomes in the GBA.

Image source - <https://www.bayarea.gov.hk/>



Target, nontarget, and suspect screening and temporal trends of per- and polyfluoroalkyl substances (PFASs) in marine mammals from the South China Sea (SCS)

[*Environ. Sci. Technol.* 2021, 55(2): 1045-1056]

We conducted target analysis and nontarget screening of PFASs in stranded Chinese white dolphins and finless porpoises collected in the GPA. Levels of two emerging PFAS (perfluoroethylcyclohexane sulfonate and 2,3,3,3-tetrafluoro-2-propanoate) in porpoises increased over time. Fifteen additionally identified PFASs were reported for the first time in marine mammals. 6:2 chlorinated polyfluoroalkyl ether sulfonate might pose adverse effects in terms of reproductive injury potential on most investigated marine mammals.

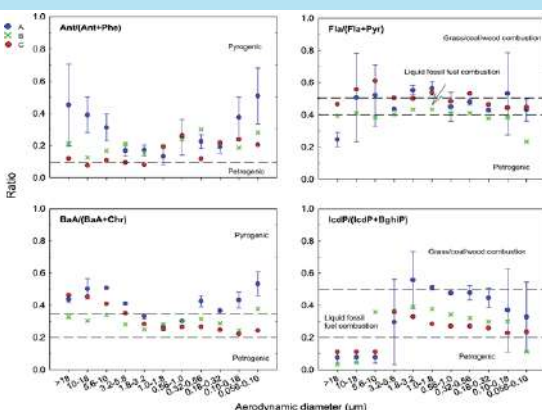
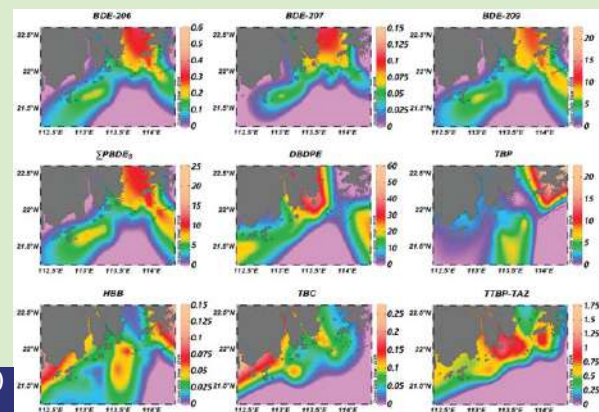
Figure: Temporal changes in the levels of two PFASs in marine mammals (ng/g dry weight) and chemical structures of some PFASs identified by nontarget screening.

Occurrence and spatial distribution of legacy and novel brominated flame retardants (BFRs) in seawater and sediment of the South China Sea (SCS)

[*Environ. Pollut.* 2021, 271: 116324]

We investigated polybrominated diphenyl ethers and novel BFRs in the seawater and surface sediment from the SCS. Decabromodiphenyl ether and decabromodiphenyl ethane were predominant. Two novel BFRs, tris (2,3-dibromopropyl) isocyanurate and 2,4,6-tris (2,4,6-tribromophenoxy)-1,3,5-triazine, seldomly detected in aquatic matrices worldwide, were detected for the first time in the studied area, and their relatively high levels and detection frequencies indicated their ubiquitous application in the GBA.

Figure: Spatial distribution of the detected BFRs (ng/g dry weight) in the surface sediment.



Tracing human footprint and the fate of atmospheric polycyclic aromatic hydrocarbons (PAHs) over the Pearl River Estuary (PRE), China: Importance of particle size

[*Sci. Total Environ.* 2021, 767: 144267]

We collected gaseous and size-segregated particulate samples of ambient air at the PRE to investigate the impacts of anthropogenic activities on PAHs in the oceanic atmosphere. Airborne PAHs over the PRE were mostly attributed to vehicle emission and combustion sources, and the higher molecular-weight PAHs were greatly ascribed to dry deposition and air-water exchange, probably posing a health risk to marine organisms in the PRE region.

Figure: Diagnostic ratios of PAH isomers in 11 particle size fractions at the sampling sites.

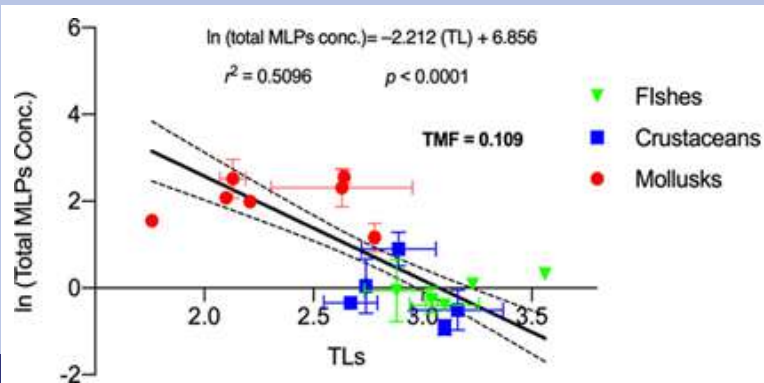
Research in the GBA (Cont')

Occurrence and trophodynamics of marine lipophilic phycotoxins (MLPs) in a subtropical marine food web

[*Environ. Sci. Technol.* 2021, 55(13): 8829-8838]

We collected various food web components, including mollusks, crustaceans, and fishes from marine environments of the GBA, for the analysis of 17 representative MLPs. The total MLP levels generally decreased as follows: mollusks > crustaceans > fishes. Okadaic acid, dinophysistoxins, and yessotoxins were the predominant MLPs accumulated in the studied biota. Trophic dilution of the total MLPs was observed in this food web.

Figure: Trophic transfer of the total MLP levels (ng/g wet weight) in the studied food web.



Meet our team



Dr. Yuefei Ruan

Research Assistant Professor at SKLMP
Visiting Assistant Professor at Department of Chemistry, CityU

She received her doctoral degree at CityU. Dr. Ruan is a well-trained environmental chemist. She selects SKLMP because this institute is strong in marine pollution in terms of eco-safety and environmental risk assessment. Her current research work focuses on the trace analysis and ecotoxicology of emerging chemicals of concern in the marine environment.



Dr. Xiaying Xin

Research Assistant Professor at SKLMP
Visiting Assistant Professor at School of Energy and Environment, CityU

She received her doctoral degree in Canada. Dr. Xin's work focuses on applying advanced technologies to explore the effects of emerging pollutants on single cells and developing removal technologies. Dr. Xin has an enthusiasm in marine protection; thus, she selects SKLMP to start her career.



Dr. Pei Hong

Lecturer, Anhui Normal University
Visiting Fellow at SKLMP

Dr. Hong's research interests include surface water ecological restoration and bioaugmentation of functional microorganisms. She likes SKLMP because there are multiple outstanding teams conducting world-class research. She is currently exploring the tolerance mechanism and synergistic removal effects of denitrifiers on various toxic drugs.



Dr. Dongmei Lu

Associate Professor, Lingnan Normal University
Visiting Fellow at SKLMP

Dr. Lu's research interests include microbial diversity and functional metabolites. The reason for Dr. Lu to choose SKLMP is that this institute has many outstanding researchers and advanced instruments. She is cooperating with Dr. Xin to explore hormesis mechanism caused by antibiotics at environmental levels.

SKLMP Outstanding Research Output Prizes

The presentation of the first SKLMP Outstanding Research Output Prizes began after the launch of 10th Anniversary Book in the evening of 12th August, 2021.

Dr. Xin Li was awarded Professor Paul Lam's Postdoctoral Researcher Output Prize (PROP) for her publication in *Water Research* with the title of "The effect of temperature on physiology, toxicity and toxin content of the benthic dinoflagellate *Coolia malayensis* from a seasonal tropical region". This study has raised attention to the potentially increasing risks posed by toxic benthic dinoflagellates during heat waves in coastal waters.

Mr. Qi Wang was awarded Professor Rudolf Wu's Research Postgraduate Output Prize (RPOP) for his publication in *Environmental Science and Technology* with the title of "Target, nontarget, and suspect screening and temporal trends of per- and polyfluoroalkyl substances in marine mammals from the South China Sea". The study showed that the emerging PFAS 6:2 Cl-PFESA could have possible adverse effects in terms of reproductive injury potential on most of the investigated cetaceans.

Prof. Lam and Prof. Wu issued the certificates to them and encouraged them to keep learning, work hard and make further contributions.



Prof. Lam & Dr. Xin Li



Mr. Qin Wang & Prof. Wu

News updates

Website revamp

After six months of hard work and dedication, we are very excited to announce the launch of our newly revamped website.

We endeavour to provide our members, working partners, and the general public with an easier and faster way to navigate our website. It is a great platform for learning about SKLMP's research and publications, conferences, laboratory facilities and community services; we also keep you abreast of the latest knowledge and expertise in the field of marine environmental research which is important to pollution monitoring and control, environmental risk assessment, ecosystem responses to stressors, and ecological restoration. To receive our upcoming information and activities, please sign up for our newsletter.



Visit us at <http://www.cityu.edu.hk/sklmp>

We are hiring

We are looking for five postdoctoral researchers to support our Strategic Research Theme projects in technology for pollution monitoring & control; eco-safety & environmental risk assessment; and ecosystem responses & ecological restoration.

Apply through HRO now!

New logo, new image

SKLMP has just completed its first rebrand in 10 years. We took a less-is-more approach with our new modest logo as we believe it to be more impactful. This clean and simple design intends to communicate concise concepts effortlessly. We have also made custom SKLMP logo polo shirts for members, staff and students to promote our laboratory and build team spirit.



HKMU joins SKLMP

SKLMP Laboratory Management Committee, our Academic Committee and the International Advisory Committee have approved and accepted the Hong Kong Metropolitan University (HKMU) as a new institutional member of SKLMP, formally commencing from 1st January 2022. We have recently invited their interested faculty members to apply for SKLMP memberships. As an inclusive and collaborative organisations, we warmly welcome members from HKMU.



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 30th May 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!

