

FRANCE - HKUST INNOVATION HUB

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Orange Fab

ORANGE

INNOVATION STRATEGY IN ASIA

On October 20th 2017, an executive delegation from **Orange** was invited to HKUST by the **School of Engineering's Technology Leadership Entrepreneurship (TLE)** program and the Consulate General of France in Hong Kong.

Thirteen Orange executives from various branches worldwide spent one week in Mainland China and Hong Kong as part of an internal training program. It aimed to reinforce links with fast-growing economic strength and **anticipate cooperation** in the future. Innovation has been identified as a major focus of the Orange delegation.

The delegation visited HKUST's **Robotics Institute**, and joined a conference session with **Professor Yee**, where two Orange speakers introduced Orange group strategy (by **Mr. Emmanuel Rochas**, Director of Orange Normandie Centre) and Orange open innovation initiatives (by **Mr. Yao Lu**, Director of Intelligence and Projects) to the audience from the TLE program.

THE ORANGE OPEN INNOVATION STRATEGY

Orange is one of the **largest operators of mobile and internet services in Europe and Africa** and a global leader in corporate telecommunication services. It endeavors to make digital life easier for more than **260 million customers**, and believes that open innovation along with a good ecosystem is key to reinforce **creativity, efficiency and positive economic impact**.

Orange has invested **€732 million in research and innovation**, becoming a major player on the global innovation stage and pushing the innovation drive in France. It actively supports **Open Innovation** as a group strategy to identify, support and promote the digital skills that will change what becomes essential in our lives. From now until 2020, Orange aims to **support 500 startups** across a range of different projects worldwide.

The Orange ecosystem welcomes **young pioneers** to lead change in tomorrow's digital world. Orange finances startup projects via Orange Digital Investment, opens APIs with Orange Developer and **provides resources** to help these pioneers achieve their projects. Priority access to Orange distribution channels, resources, and local and international markets is also offered to qualified startups. These startups are promoted through events, **hackathons, challenges and awards** through Orange, such as the Orange Social Venture Prize for Africa and the Middle East.

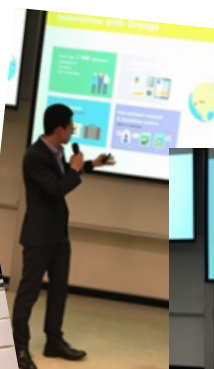
Orange Fab, the startup accelerator program created by Orange, recruits and accelerates startups globally at **15 locations** including Taipei, Tokyo and Seoul in Asia. Selected startups are also entitled to join the **Orange Fab Startup Asia Tour** organized by the Orange team in China, for them to explore growth opportunities and meet local Orange partners. Currently, 300 startups have been supported as part of the Orange Fab program. Meanwhile "Orange Digital Ventures" is a €100M corporate fund, focusing on areas such as **connectivity, IoT, digital enterprise, FinTech**, etc.

The meeting between HKUST, Orange and Consulate General of France in Hong Kong has **enhanced mutual understanding** of their strategies and efforts towards innovation, and has brought forward potential **cooperation** between the research expertise of **HKUST and the global network of Orange**.

Written by Yao LU

Alex WANG,
CEO Orange Sourcing
Consulting

Yao LU,
Director - Intelligence
and Projects at
Orange



Emmanuel ROCHAS,
Director of Orange
Normandie Centre



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IFREMER

A SEA OF SCIENCE
AND OPPORTUNITIES

The French Research Institute for Exploitation of the Sea (Ifremer), a national institute for **integrated marine science research**, relies on its observational and monitoring capacities to produce scientific knowledge and know-how with **economic value in response to societal issues**. Created in 1984, Ifremer is a public institute of industrial and commercial nature, placed under the joint supervision of the **ministries in charge of research and of the environment**. With 1,500 staff, Ifremer **operates in 5 centres and 20 coastal stations** distributed along the French metropolitan coastlines and in French overseas territories, such as the **Pacific Centre in French Polynesia and New Caledonia**.

Ifremer's research topics stretch **from the coast to the deep sea**, from studying marine **ecosystems and biodiversity**, identifying **sustainable exploitation** of marine resources, learning about ocean dynamics to exploring deep ocean frontiers. To this end, Ifremer designs and builds marine research and monitoring infrastructures, **develops tools** for observation and scientific investigation and manages databases. For example, automated **underwater vehicles, sensors, underwater observatories, supercomputers**, etc. Ifremer also houses the coordinating office of the International Argo programme 'Euro-Argo' as a **European Research Infrastructure Consortium**. From January 2018, Ifremer will operate the French oceanographic fleet for the benefit of the whole scientific community.

This prodigious expertise and multiple research infrastructures underpin Ifremer's missions to advance ocean research, develop economic partnership via **transferring cutting-edge technology**, and supporting the implementation of public policy, both at a national and a European level.

BUSINESS DEVELOPMENT AND ECONOMIC PARTNERSHIPS

Marine research possesses **enormous potential for innovation**, leading to competitiveness and growth. Ifremer goes above and beyond its objectives of producing knowledge and meeting social demands, it contributes to economic development by creating **economic value from its studies**, and also transfers this value to the socio-economic sector. The broad range of Ifremer's activities enables it to work in a variety of sectors, such as underwater systems, operational oceanography, **marine biotechnologies**, fisheries science, aquaculture, environmental monitoring, and **energy and mineral resources**. It is the Institute's ambition to **share the benefits** of this "blue growth" **with companies**, corporate groups and SMEs and to support sustainable growth in the marine and maritime sectors.

We are acting on turning know-how about ocean **resources** into value in a **responsible way**. We are concentrating on innovating technologies to tackle scientific challenges, and on coordinating research infrastructures to serve economic development.

OCEAN CONNECTION: IFREMER ON THE INTERNATIONAL SCENE

Ifremer endeavours to **consolidate the position of French marine science research** on the European and even the global scene through taking key roles in **international organisations** and promoting **bilateral cooperation**. In particular, a **long collaboration history** exists with **Asian countries**.

For more information, visit: www.ifremer.fr @Ifremer_en <https://www.facebook.com/ifremer/>



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- 6 research vessels
4 of them ocean class
- 5 underwater vehicles
1 manned submersible (~6,000 m)
1 ROV (~6,000 m), 2 AUVs
1 HROV (~2,500 m)
- 3 testing facilities
3 basins, hyperbaric testing tanks...
- specialized laboratories
- data bases
- software





Pr. Xuhui Huang (HKUST) and Dr. Marco Cecchini (Institut de Science et d'Ingénierie Supramoléculaires - CNRS - University of Strasbourg) are two scientists working on **theoretical and computational chemistry**. They were laureates of the French-Hong Kong research scheme grant **PROCORE in 2015**. As their project is coming to an end, Pr. Huang looks back on their collaboration.

WHO ARE YOU, PROF. XUHUI HUANG?

I am the **Padma Harilela Associate Professor of Science** at HKUST. I defended my **Ph.D. from Columbia University** in 2006 with Prof. **Bruce Berne**.

I did my postdoc research at **Stanford University** with Profs. Michael Levitt (Nobel Laureate in Chemistry) and **Vijay Pande**. Then I joined the **Department of Chemistry of HKUST** as an assistant professor in **2010**. My research is focused on developing and applying **statistical mechanics algorithms** to model functional conformational changes of **complex biological systems**.

WHAT ARE YOU WORKING ON?

My research is mainly focused on developing and applying **computational chemistry tools** to understand how **complex biological molecules** such as **RNA polymerase** operate. A few years ago, I became interested in applying these tools to investigate the **kinetics of molecular self-assembly**. Self-assembly here refers to the **spontaneous process** where chemical molecules' molecular components arrange into **predefined architectures**. Marco and I performed molecular dynamics simulations and built **Markov state models** to elucidate kinetic pathways' self-assembly processes. So far, we are still in the **early stages of the project**. Nevertheless, we've obtained **promising results** using molecular dynamics simulations to successfully simulate the self-assembly process of a two-component system on the surface. In the future, we hope to reveal key factors determining both thermodynamic and kinetic control in self-assembly and help rationalize the design principles for self-assembly architectures. In fact, this is somewhat like searching for the best way to build Legos with particular building blocks.

HOW DID THE COLLABORATION WITH MARCO CECCHINI START?

Actually, this is my second time doing a **PROCORE project**. The first time was with a researcher at the French Institute for Research in Computer Science and Automation (**INRIA**) in 2011. I met my current counterpart, Marco Cecchini, through the **Chinese-French network in theoretical chemistry** (Groupeur Réseau Franco-chinois de Chimie Théorique - CNRS), which organizes a **workshop every 2 years**. I attended the 5th one in **Strasbourg in 2015**. During this event Marco and I decided to set up a collaboration but we had to **find funding**. The PROCORE scheme helps **build very close collaboration**, so we often do **Skype meetings** and I **went to Strasbourg** for a week this year. I believe it is very important to **pay a visit to each other's laboratories** because it is easier to talk about our progress and to fix details in person.

WHAT ARE THE NEXT STEPS OF YOUR PROJECT?

In addition to completing our simulation work on self-assembly, one of the important next steps is to **validate our theoretical predictions** via experiments. As both Marco and I are theoreticians, we are looking to **collaborate with local experimentalists** at institutions in Hong Kong. On the **French side**, Marco is also considering **extending** our cooperation to experimentalists in Strasbourg. Chemistry in the **University of Strasbourg** is world renowned, with three prestigious researchers who were **Nobel laureates (JM Lehn, M Karplus, JP Sauvage)** - Sauvage received his just last year!

As applying simulations on self-assembly is a **relatively new field**, Marco and I expect to work on **many projects together in the future**. We just wrote a perspective article, which is currently under review, to present the remaining challenges in this field. The **PROCORE project** was granted two years ago, which has greatly **helped kick-start my collaboration** with Marco. Since several years ago, the **Research Grant Council (RGC) in Hong Kong** has been working hand in hand with the **National Agency for Research (ANR) in France** to fund scientific projects and we plan to apply to that scheme. Finally, even though our research is about **fundamental science**, our **long-term goal** is to have the outcome of our research **benefit society** in ways such as the fabrication of advanced materials via self-assembly.

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The **HKUST Robotics Institute** held its first Robotics Day successfully on Oct 30th 2017, supported by the **School of Engineering**. The day focused on how robotics and other automated technologies **create profound and positive impact on industries and our daily lives**. The event served as a platform to facilitate **knowledge exchange** among **industrial and academic experts**, and as a channel to showcase the research and educational results of the Robotics Institute over the past year.

The HKUST- Robotics Institute serves as a **multidisciplinary platform** for integrating, facilitating and enabling University-wide programs in robotics-related research, development and education. It highlights past and existing research and initiates **new programs with seminars, meetings, research proposals, national and international collaborations** with industry, institutions, and public outreach. Building on 25 years of research, a **network of alumni**, and a vibrant regional economy, the Robotics Institute will draw on innovations in **sensors, devices, systems, networks, neuro-sciences, data analytics**, and machine learning to catalyze new research by faculty and students in smart manufacturing, transportation, safety, healthcare, and other applications that **can benefit society**.

During Robotics Day, the HKUST Robotics Institute showcased many of their achievements and projects, including an autonomous vehicle, an **autonomous drone and an autonomous boat**, all of which utilize cutting-edge **self-navigating systems**. There were also smart manufacturing production lines, a **robotic chess player**, and virtual personalities that can analyze the user's emotions and personality and even **conduct therapy**.

Addressing the event, the **Under Secretary for Innovation and Technology, Dr David Chung**, said that Hong Kong's robotics sector is achieving success not simply in industrial robotics, but also in hi-tech areas such as **animatronics and artificial intelligence**, with companies focused on healthcare, safety and disaster management. The Government has identified **eight key initiatives** to promote innovation and technology development, including increasing R&D expenditure and nurturing talents. Together with technological research infrastructure projects and **Hong Kong-Shenzhen Innovation and Technology Park** at the Lok Ma Chau Loop in the pipeline, Dr. Chung is confident that Hong Kong will make a difference.

Prof. Michael Wang, Director of the HKUST Robotics Institute, said, "*The **biggest challenge** in Hong Kong for robotics development at present is the **availability of critical mass and skills to tackle the key problems** - in the areas of **external funding, facilities, and industry involvement**. We at the Robotics Institute have made a very promising start, and we look forward to continued support from **the Government and the private sector**."*

Written by Jackson HUNG (HKUST - Project Coordinator)



Pr Michael Yu WANG thanks Dr David CHUNG, JP, Under Secretary of the Innovation and Technology Bureau (ITB)



2 DECEMBER 2017

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SPOTLIGHTS ON



ALEXANDRE YERSIN SCHOLARSHIP

For the 19th consecutive year, the Consulate General of France in Hong Kong and Macau offers scholarships for excellence to master students. This scheme for Hong Kong and Macau residents provides €12,500 per year, composed of an allowance of €660 per month, social welfare, public liability and repatriation insurance, accommodation help, a social and cultural activities guide, and intensive French class at Alliance Française before their departure.

FOR THIS EDITION, THE DEADLINE FOR APPLICATIONS IS IN
April 2018

BONJOUR TALENTS 2018



The French Chamber of Commerce in Hong Kong is organizing a new edition of "Bonjour Talents", a career fair dedicated to French companies. The French Chamber is joining forces with Hong Kong University, HKUST, Chinese University and Baptist University to bring over 600 students, from a broad range of profiles, MBA, undergraduates and postgraduates. Bonjour Talents will be a unique opportunity to gather future graduates and French companies, enlightening attractive career paths.

THIS CAREER FAIR WILL BE OPEN TO 19 COMPANIES AND WILL TAKE PLACE ON
9 February from 12.00pm to 6.00pm, at HKUST Business School Central
(Hong Kong Club Building, 3A Chater Road, Central)



FSMP

THE FONDATION

SCIENCES MATHÉMATIQUES DE PARIS

The Fondation Sciences Mathématiques de Paris offers to students, selected through an online application process, some scholarships of 1 or 2 years in one of the universities of its network. The laureates will be able to register to the universities of the FSMP network. They will benefit from a range of courses based on the skills of the whole Parisian laboratories in mathematical sciences research.

<https://www.sciencesmaths-paris.fr/en/masters-250.htm>

EVENTS

PAST EVENTS

- FEBRUARY 20th** . Visit of Pr. C. LE HÉNAFF, Institut Polytechnique de Bordeaux
- MARCH 24th** . Inauguration French-HKUST Innovation Hub
- . Conference of J-P. BOURGUIGNON, President of the European Research Council, at the Institute for Advanced Study
- APRIL 28th** . Conference of L. BOUTILLON, VINCI Construction
- . Visit of the *So French So Innovative* show, organized by the French foreign trade advisers
- SEPTEMBER 1st** . Visit of A. MYNARD, French National Center for Scientific Research Director in China
- SEPTEMBER 6th** . Visit from a delegation of the École Spéciale des Travaux Publics (ESTP) with the French company Dragages
- OCTOBER 20th** . Visit and lectures from the 12 executives of the Orange Fab scheme
- NOVEMBER 13th** . Signing of an exchange agreement between Paris Descartes University Center for Research and Interdisciplinarity (CRI) and HKUST/Interdisciplinary Programs Office (IPO)
- DECEMBER 7th** . Visit from Jacques BIOT, President of École Polytechnique