



Innovation China UK
中英科技创新计划

KING'S
College
LONDON

University of London

ICUK Meeting with MoST

22nd November 2007

**King's College London:
Collaborations with China**



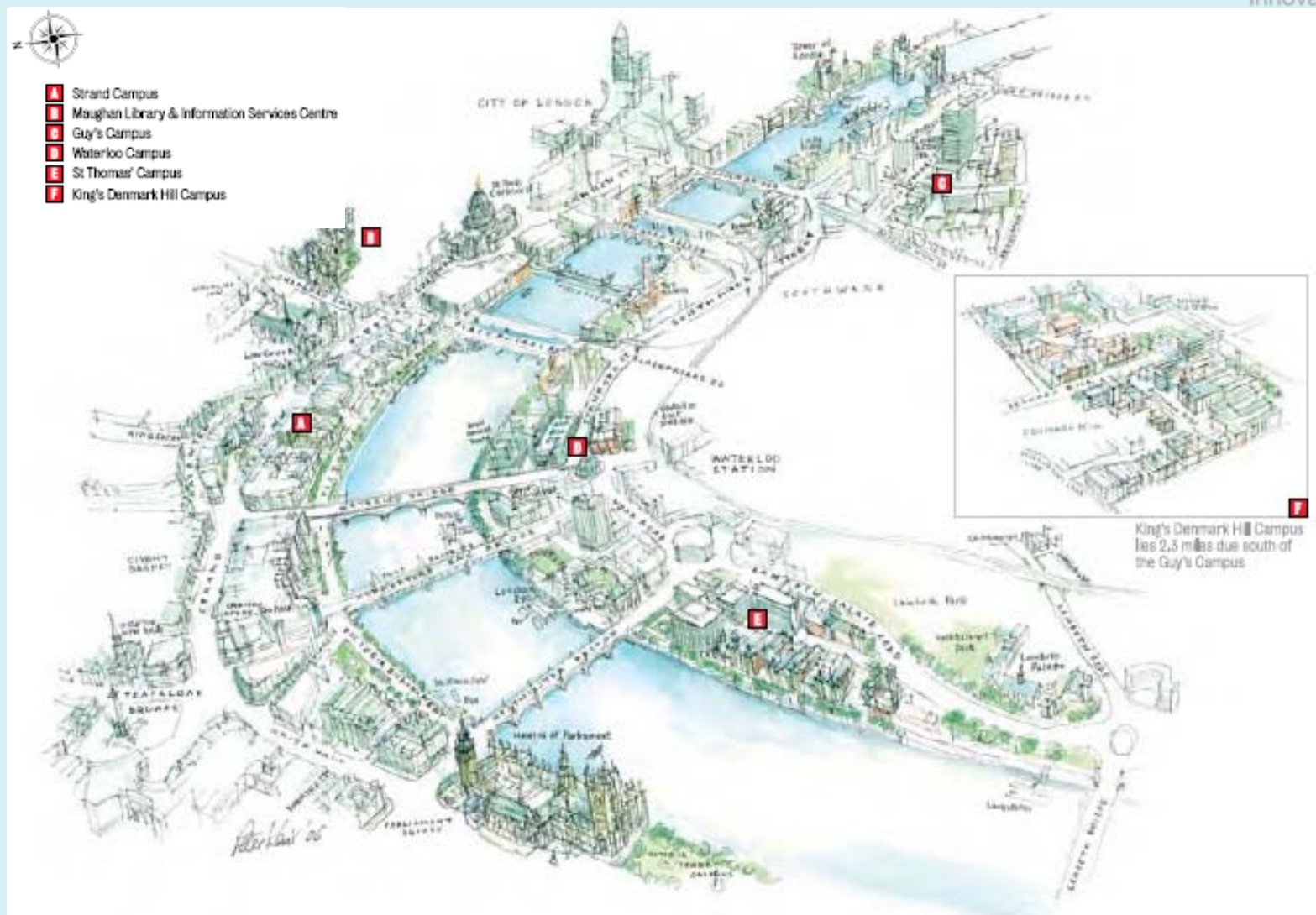
About King's

One of the two founding Colleges of the University of London

King's College London is a major international University:

19,000 students, > 6,000 postgraduate

3,000 academic researchers



About King's

9 schools of study:

Biomedical & Health Sciences

Dental Institute

Medicine

Florence Nightingale School of Nursing & Midwifery

Institute of Psychiatry

Physical Sciences & Engineering

Social Science & Public Policy

Humanities

Law

About King's

Health Schools with an annual research budget of £185 million (2005-6)

Health Schools hold research grants to the value of nearly £350 million

17 interdisciplinary divisions over four campuses at Waterloo, Guy's Hospital, St Thomas' Hospital and King's College Hospital

NHS hospitals serve a patient population in excess of 1 million

King's hosts 5 Medical Research Council Centres

Research Links with China:

Example 1: Traditional Chinese Medicine

Example 2: Multi-layer Mirrors

Example 3: Metamorphic mechanisms

Research Links with China:

**Example 1: Traditional Chinese Medicine,
Prof Peter Hylands**

**Partners: Shanghai Institute of Materia
Medica,
Professor Hualiang Jiang**

**Technology: developing metabonomic approaches
to the standardisation of TCM.**

**Application of technology: Quality control
procedures that will lead to improved safety and
efficacy of TCM, accelerating their route to market
by overcoming regulatory barriers.**



中国科学院上海生命科学研究院
SHANGHAI INSTITUTE FOR BIOLOGICAL SCIENCES, CAS



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Dear Prof. Jane Gate,

It's great to know that King's College London along with four other famous British Universities had been successful in an application to the UK Government's Higher Education Innovation Fund (HEIF), and intend to support the cooperation between Shanghai Research Center for Modernization of Traditional Chinese Medicine (TCM) and Natural Product Center in King's College London. Since Shanghai Institutes for Biological Science (SIBS), Chinese Academy of Sciences (CAS) has a long-term cooperation and good relationship with UK government, these activities bring UK and China closer together in areas of common interest together with good social benefits.

"Think UK" in SIBS is an unprecedented initiative to strengthen links between young people in the two countries. Accordingly, I fully agreed that the Innovation China UK (ICUK) Program will increase links and collaborations between the UK and China in science, technology innovation and highlight already existing links especially in the area of the TCM research.

Obviously, we already have the favorable cooperation base with King's College London in the area of the innovative application of metabolomic approaches to the standardization of TCM. Prof. De-mo Gao is one of the outstanding scientists on the leading edge of TCM modernization research field. And Shanghai Research Center for Modernization of TCM is the top-ranking Institute throughout China. SIBS will try our best to shoot for the financial support from CAS and local government as always.

In summary, the UK and China have a lot in common. Both countries see science and innovation as vital to sustainable economic development. It won't be hard to imagine how prosperous our cooperation would be, we have good opportunity, favorable geographical location and support from the people. We would like to see more for the particular project plan.

We look forward to working together in the near future.

Yours Sincerely,

Qiang Pei

President, Shanghai Institutes for Biological Sciences,
Chinese Academy of Sciences

SHANGHAI INSTITUTE FOR BIOLOGICAL SCIENCES
253F Fudan University, Shanghai 200032, P.R.China
http://www.sibs.ac.cn

Research Links with China:

Example 2: Multi-layer Mirrors
Prof. Alan Michette

Partners: Tongji University, Shanghai
Prof Wang Zhan-shan

Technology: designing, fabricating and characterization of optimized soft x-ray multi-layer mirrors.

Application of technology: High-resolution x-ray microscopy and microprobing of biological material e.g. development of techniques for understanding radiation induced cancers.



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Qin Qiang
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I am writing to support the collaboration between King's College London and Tongji University.

In fact, an existing collaboration is ongoing. Since April 7th, 2004, Prof. A. Mikhlin of King's College London and Prof. Wang Chao-shan of Tongji University have been collaborating on the research project of "Design, fabrication and characterization of optimized soft X-ray polarisation multilayer mirrors". This project is supported by the National Natural Science Foundation of China (contract numbers 60374021, 604111703100) and by the Royal Society, London (contract number NCFChina/04660). The current project will continue until the end of 2006.

This research has focused on the design, fabrication and characterization of soft X-ray multilayer polarizers and analyzers involving reflection and transmission. During the collaboration, several visits have taken place for scientific discussion and analysis of results. The collaboration has been very fruitful, including following examples:

- A. The broadband multilayer polarizers, which require specialized layer distributions, have been designed and made first time, and the measurements performed at DESY synchrotron were close to those aimed for. These special components will first used in extreme ultraviolet and soft X-ray measurement fields, which have attracted significant interest, and some invited reports have been given at the international conferences.
- B. Design, fabrication and measurement of multilayer for the Al K α and Ti K α lines for the X-ray microprobe at the Oxy-Carbon Institute, UK, will continue. This instrument is producing seminal results related to radiation induced cancer, and the supply of reference multilayers is essential for the continuation of this work.
- C. Ultra-thin multilayer polarizers and reflective mirrors have also been designed and made for the "water windows" wavelength region, which is important in the high-resolution imaging of biological material in its natural state.

These results have been published in academic journals, such as, "Journal of Applied Physics", "Optics Express", etc. and have attracted significant interest. Some invited reports have been given at the international conferences, such as SPIE's Optical System Design Symposium, and 8th International Conference on the Physics of X-Ray Multilayer Structures, etc. As a result of the extremely fruitful nature of the previous and current collaborations, they plan to continue their collaborative research in advanced X-ray optics, for example, applications in high-resolution X-ray microscopy, the microimaging of biological material, for cancer related studies.

We are forward to the coming collaborative opportunity in the future.

Yours sincerely

Qin Qiang

Assistant Director of International Exchange & Cooperation Office, Tongji University



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Research Links with China:

Example 3: Metamorphic mechanisms
Prof Jian Dai

**Partners: Beijing University of Aeronautics and
Astronautics (BUAA).**
Prof Xilun Ding

**Technology: Reverse engineering of adaptive traits from
biological species to create robotic mechanisms**

**Application of technology: creation of a reconfigurable robot
for maintenance of space station/satellites, removing need for
direct intervention of astronauts.**



北京航空航天大学
BEIHANG UNIVERSITY

Prof. Li Wei
President
Beihang University (BUAA)
Beijing, 100083
PR China

26 July 2006

Ref: BUAA-KCL_L10083

Dr. Jana Gale
Deputy Director of Business Development
King's College University of London
Waterloo Campus
Waterloo, London
United Kingdom

Dear Dr. Gale:

Thank you for your letter dated 7 July 2006. We are pleased to know from the letter that you have successfully obtained the fund from the UK Government's Higher Education Innovation Fund (HEIF) with Queen Mary University of London, Universities of Nottingham, Southampton and The Royal Veterinary College for the Innovation China UK (ICUK) to develop technologies emanating from research collaborations with Chinese Universities.

In particular, we are pleased to know that part of the fund will be used to support the existing collaboration between Prof. Xijun DING and Prof. Jian S. DAI in the area of robotics in aeronautics and outer space exploration and medical robotics. We fully support this ICUK initiative and are ready to provide a matching fund of ¥4,600,000 RMB (approximately equal to £320,000 pounds) to bring forward the world-leading technology in developing metamorphic mechanisms for space technology, medical use and industrial automation.

We look forward to this exciting opportunity to work with you in the future.

Yours Sincerely,

Prof. Dr. Li Wei
President
Beihang University



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Benefits that ICUK will bring:

Access to Proof of Concept Fund to develop and move technologies like these closer to market

Access to Partnership Grant for staff exchanges and new collaborations will drive innovation