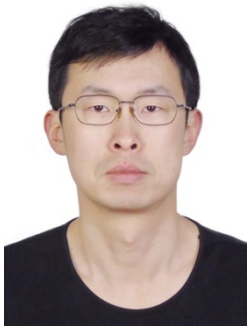
BRITISH COUNCIL

RESEARCHER LINKS

Newton Fund

Research Profile



Name: **Shun Duan**

Position: **Lecturer**
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SUMMARY OF MY RELEVANT RESEARCH AREAS:

Brief summary of your research areas, in English *just a short paragraph please*

Surface modification; Antibacterial; Gene delivery; Bone tissue engineering; Additive manufacture

Brief summary of your research areas, in Chinese *we will translate this for non-Chinese speaking UK participants*

表面修饰；抗菌；基因载体；骨组织工程；增材制造

Primary Research interests: *A fuller description of your main research areas.*

Surface modification for functionalization of biomedical materials: With the ageing of the population, the morbidity of many degenerative diseases, such as osteoporosis, is increasing in recent years. Bone fracture and defect are common complications of osteoporosis, which need implants for therapy. In the therapeutic process, infection is a major problem leading to treatment failure, especially for the ageing people with low immunity. To solve this problem, we are working on functionalized biomedical implants to enhance their antibacterial and osteogenic properties, which is based on our previous work on surface modification. For this purpose, we are developing a series of surface-modified biomedical materials, including CaP scaffolds, Ti implants, etc. Various functional polymer brushes are constructed on the surface of implants, and bioactive molecules are incorporated to the polymer brushes to improve the biological performance of the implants. By our research, it's promising to develop novel biomedical materials for the effective therapy of degenerative diseases of ageing people.

Topics in which you would like to develop collaborative research:

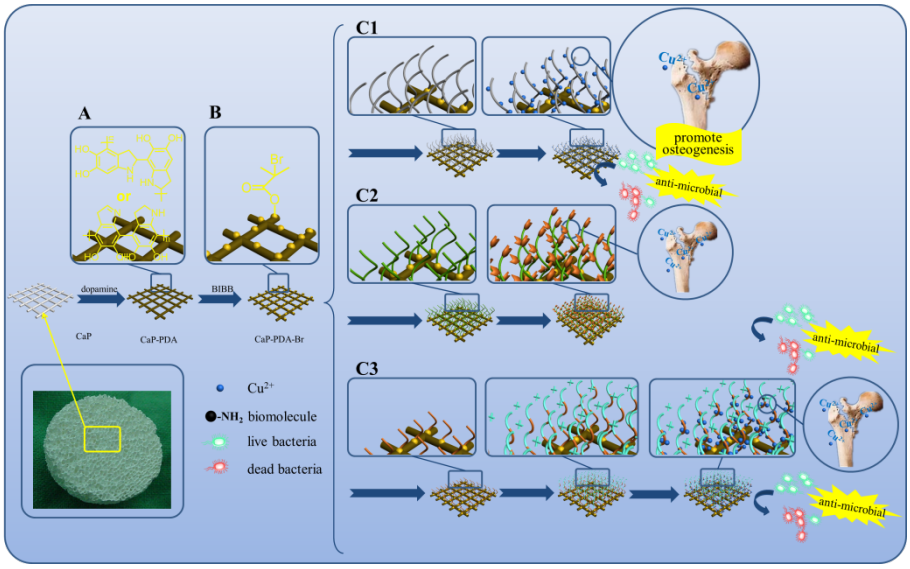
Please indicate here research areas for which you would like to find partners to undertake joint research.

We intend to seek collaboration in the research areas of surface modification of biomedical materials for antibacterial and bone regeneration to promote the healthcare of ageing people.

Relevant existing collaborations (academic/clinical/commercial) inside or outside China.
Include here any relevant collaborations you have

We currently have collaborations with The Institute of Traumatology and Orthopaedics, Beijing Jishuitan Hospital for antibacterial functionalization of CaP scaffold (supported by key project of Beijing Natural Science Foundation, Grant No.: 7161001) and Zhejiang University for surface modification of biomedical materials (supported by National Key Research and Development Plan, Ministry of Science and Tchnology of the People's Republic of China, Grant No.: 2016YFC1100404)

Relevant graphics, figures, pictures:
Use this area to show pictures or scientific figures which illustrate your research



Publications and other outputs relevant to your interest in this programme (up to 5)
Please give references to your key recent research publications

(1) **Shun Duan**, Bingran Yu, Chunxiao Gao, Wei Yuan*, Jie Ma, Fu-Jian Xu*, A facile strategy to prepare hyperbranched hydroxyl-rich polycations for effective gene therapy. *ACS Appl. Mater. Interfaces,* **2016,** Article ASAP, DOI: 10.1021/acsami.6b11029.
(2) Miao Qi[1], **Shun Duan**[1], Bingran Yu, Hao Yao, Wei Tian*, Fu-Jian Xu*, PGMA-based supramolecular hyperbranched polycations for gene delivery. *Polym. Chem.,* **2016**, 7, 4334.
(3) Yu Zhao[1], **Shun Duan**[1], Bingran Yu*, Fu-Sheng Liu, Gang Cheng, Fu-Jian Xu*. Gd(III) ion-chelated supramolecular assemblies composed of PGMA-based polycations for effective biomedical applications. *NPG Asia Mater.,* **2015**, 7, e197.
(4) **Shun Duan**, Shiqing Ma, Zhaohui Huang, Xu Zhang, Xiaoping Yang, Ping Gao, Meizhen Yin*, Qing Cai*. Visualization of in vivo degradation of aliphatic polyesters by a fluorescent dendritic star macromolecule. Biomed. Mater., **2015**, 10, 065003.
(5) Shun Duan, Xiaoping Yang, Fang Mei, Yan Tang, Xiaoli Li, Yuzhou Shi, Jifu Mao, Hongquan Zhang, Qing Cai. Enhanced osteogenic differentiation of mesenchymal stem cells on poly(L-lactide) nanofibrous scaffolds containing carbon nanomaterials. *J. Biomed. Mater. Res. Part A,* **2015,** *103*, 1424.