

# ACADEMIC TEAM

## Professor SHAN Zhi-Wei 单智伟

Email: [zwshan@mail.xjtu.edu.cn](mailto:zwshan@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4384](http://202.117.3.12:8090/en/people_show.php?id=4384)

### Research interests:

His research interests include:

(1) Probing the properties and advancing the performance of materials from the nanoscale;

(2) Accumulate and construct the knowledge system of materials at the micro- and nano- Scale;

Currently his research efforts are focused on applying and developing unique quantitative in situ TEM mechanical testing techniques (indentation/ compression/ bending/ tensile/ fatigue/ fracture + heating/ electrical + gas environment).



## Professor SUN Jun 孙军

Email: [junsun@mail.xjtu.edu.cn](mailto:junsun@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4358](http://202.117.3.12:8090/en/people_show.php?id=4358)

### Research interests:

His research interests are the deformation and phase transformation of metal materials, including strengthening and toughening of metallic materials, currently focusing on the mechanical behavior of materials at small length scale, especially in micro-nano-sized effect on the deformation and phase transformation of materials.



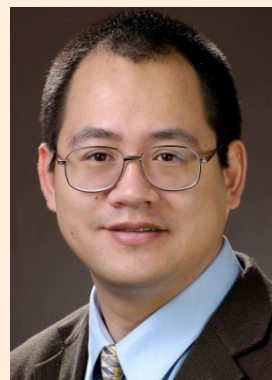
## Professor LI Ju 李巨

E-mail: [liju@mit.edu](mailto:liju@mit.edu)

Webpage: [http://nano.xjtu.edu.cn/web/en/people/teacher/Ju\\_Li\\_11.html](http://nano.xjtu.edu.cn/web/en/people/teacher/Ju_Li_11.html)

### Research interests:

- (1) Overcoming Timescale Challenges in Atomistic Simulations;
- (2) Energy Storage and Conversion;
- (3) Materials in Extreme Environments and Far from Equilibrium.



# ACADEMIC TEAM

## Professor MA En Evan 马恩

E-mail: [ema@jhu.edu](mailto:ema@jhu.edu)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4505](http://202.117.3.12:8090/en/people_show.php?id=4505)

### Research interests:

- (1) Amorphous metals;
- (2) Chalcogenide phase-change alloys for memory applications;
- (3) Nanostructured metals;
- (4) Dislocations and twins in plastic deformation;
- (5) In situ transmission electron microscopy;
- (6) Elastic strain engineering of small-volume materials.



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## Professor Ekhard Salje

Email: [es10002@esc.cam.ac.uk](mailto:es10002@esc.cam.ac.uk)

Webpage: <http://www.esc.cam.ac.uk/directory/ekhard-salje>

### Research interests:

His research focuses on a mathematically correct and physically meaningful description of microstructures in minerals. Elastic Forces generate 'universal' microstructures such as twins, needle and trumpet domains, wiggled domain walls, comb structures and tweed. The internal structures, e.g. of a twin wall, and elastic forces are atomic in origin. Atomic forces determine transport properties along twin walls, the thickness of such walls, and lead sometimes to extreme electronic properties of such microstructures. Recent work includes research on the encapsulation of actinides in ceramic matrices. Using computer simulation of many interacting particles (>1 million atoms) together with results from diffuse X-ray scattering, NMR and IR spectroscopy the polymerisation of minerals such as zircon during shock events and the percolation behaviour of their dissolution was identified.



# ACADEMIC TEAM

## Professor WANG Yun-Zhi 王云志

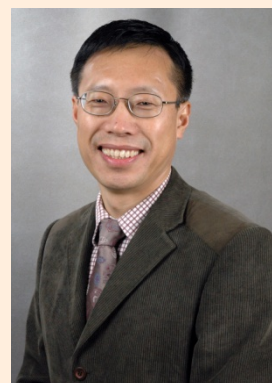
E-mail: wang.363@osu.edu

Webpage:

[http://nano.xjtu.edu.cn/web/en/people/teacher/Yunzhi\\_Wang\\_1039.html](http://nano.xjtu.edu.cn/web/en/people/teacher/Yunzhi_Wang_1039.html)

### Research interests:

His research projects focus on the development of computational models and simulation techniques, validated by experimentation, for fundamental understanding of mechanisms underlying microstructural evolution during phase transformations and plastic deformation, design of novel microstructures through non-conventional transformation and deformation pathways, and practical applications to microstructural engineering of advanced materials.



## Professor LI Chang-Jiu 李长久

Email: licj@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4374](http://202.117.3.12:8090/en/people_show.php?id=4374)

### Research interests:

- (1) Fundamentals on thermal spraying including splat formation and quantitative characterization of lamellar microstructure by visualization of the pore-net inherent to thermal spray coating, coating formation mechanisms, development and controlling of microstructure of the coating;
- (2) Cold spraying for development of potential superhard cermet coatings, intermetallic coating, cost-effective bond coat for TBCs, and nanostructured coatings, fully dense corrosion-resistant alloy coatings;
- (3) Plasma spraying for design and creation of new generation thermal barrier coatings;
- (4) Nano-structured functional ceramics preforming and Assembly by nano- and submicrometers ceramics particles by Vacuum cold spraying;
- (5) HVOF (High velocity oxy-fuel) for high performance cermet coating;
- (6) Solid oxide fuel cell fabrication by thermal spray processes;
- (7) Dye-sensitized solar cell assembly by newly developed Vacuum cold spray system;
- (8) Re-manufacturing and additive manufacturing via thermal or cold spray processes.



# ACADEMIC TEAM

## Professor MIN Tai 闵泰

Email: tai.min@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4382](http://202.117.3.12:8090/en/people_show.php?id=4382)

### Research interests:

- (1) Low dimensional mesoscopic quantum system material, device's Electromagnetic acousto-optic elementary excitation and quantum transport theory;
  - (2) Simulations of Low dimensional mesoscopic quantum system material and device;
  - (3) EMMI growth technology and physical characterization of new material;
  - (4) Development of quantum device below 5nm;
  - (5) Design, optimization and applied technology of quantum computing, brain-like computing and storage system;
  - (6) Investigation and development of magnetic biological medical microfluidic testing system.
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## Professor WANG Hong 汪宏

Email: hwang@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4446](http://202.117.3.12:8090/en/people_show.php?id=4446)

### Research interests:

Prof. Hong Wang's main research interests include dielectric materials, multifunctional composites, and dielectric measurements. She explored new dielectric ceramics with low sintering temperatures for LTCC applications, multifunctional low loss microwave composites with magnetic and electric properties as well as flexibility, nanocomposites for energy storage and electronic package applications. She also conducted the development of measurement technology and systems for wide frequency and wide temperature dielectric measurements in her lab. Her works on microwave dielectrics and dielectric measurements have also led to successful collaborations with industries.

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# ACADEMIC TEAM

## Professor HAN Yong 憨勇

Email: yonghan@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4369](http://202.117.3.12:8090/en/people_show.php?id=4369)

### Research interests:

- (1) Preparation and microstructure characterization of nanomaterials;
- (2) Surface modification of bio-metals;
- (3) Nano-patterned bioactive coatings on bio-metals;
- (4) Mechanical behavior and biological modification of 3D porous bio-metals.



## Professor XING Jian-Dong 邢建东

Email: jdxing@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4391](http://202.117.3.12:8090/en/people_show.php?id=4391)

### Research interests:

- (1) Microstructure control of metallic wear resistant materials;
- (2) New wear and corrosion resistant materials;
- (3) Wear mechanism and damage control;
- (4) Wear resistant composites and cast alloys under harsh working conditions.



## Professor GAO Yi-Min 高义民

Email: ymgao@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4367](http://202.117.3.12:8090/en/people_show.php?id=4367)

### Research interests:

- (1) Metal wear resistant materials;
- (2) The preparation and forming of iron base composite material;
- (3) Tribology of ceramics;
- (4) Microstructure and properties characterization of abrasion resistant materials.



# ACADEMIC TEAM

## Professor ZHANG Jian-Xun 张建勋

E-mail: [jxzhang@mail.xjtu.edu.cn](mailto:jxzhang@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4394](http://202.117.3.12:8090/en/people_show.php?id=4394)

### Research interests:

Welding and joining of advanced materials; Laser precision processing and forming technology; Numerical simulation and emulation technique; Internet-based manufacture and expert system; Security analysis and evaluation of welding structure; Combine the technologies of computer and artificial intelligence with the techniques of connecting, reconstruct the traditional welding and joining industry.



## Professor LIU Yong-Ning 柳永宁

Email: [ynliu@mail.xjtu.edu.cn](mailto:ynliu@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4378](http://202.117.3.12:8090/en/people_show.php?id=4378)

### Research interests:

- (1) Material structure analysis, mechanical properties testing;
- (2) The comprehensive research of strength of materials and fatigue fracture;
- (3) Metal function of hydrogen storage materials;
- (4) Hydrogen storage material in carbon nanotubes;
- (5) NI-MH battery(nickel-metal hydride battery).



## Professor DING Xiang-Dong 丁向东

Email: [dingxd@mail.xjtu.edu.cn](mailto:dingxd@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4354](http://202.117.3.12:8090/en/people_show.php?id=4354)

### Research interests:

- (1) Phase Transformation in Ferroic Smart Materials;
- (2) Mechanical Behavior of Materials under Extreme Conditions;
- (3) Strain Engineering and 2D Functional Materials.





# ACADEMIC TEAM

## Professor WANG Hong-Jie 王红洁

Email: [hjwang@mail.xjtu.edu.cn](mailto:hjwang@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4388](http://202.117.3.12:8090/en/people_show.php?id=4388)

### Research interests:

- (1) Advanced ceramics;
- (2) Porous ceramics (including Functional ceramics);
- (3) Ceramic matrix composite;
- (4) Carbon ceramic graded materials.



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## Professor MA Fei 马飞

Email: [mafei@mail.xjtu.edu.cn](mailto:mafei@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4357](http://202.117.3.12:8090/en/people_show.php?id=4357)

### Research interests:

- (1) Stress/strain effect on the functional properties of nano-materials;
- (2) Fabrication of nanostructures and STM characterization;
- (3) Preparation and characterization of Graphene and TMDs two-dimensional materials;
- (4) Molecular dynamics simulations of deformation and phase transformation;
- (5) First-principle calculation on electronic and thermal properties.



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## Professor MA Wei 马伟

Email: [msewma@mail.xjtu.edu.cn](mailto:msewma@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4380](http://202.117.3.12:8090/en/people_show.php?id=4380)

### Research interests:

- (1) Morphology investigation of organic electronics (OPV, OFET, etc) and device fabrication;
- (2) Development of Synchrotron & neutron techniques (resonant soft x-ray scattering and neutron scattering);
- (3) Interface and surface structure of Soft matter (block copolymer, protein, etc.).



# ACADEMIC TEAM

## Professor ZHANG Wei 张伟

Email: wzhang0@mail.xjtu.edu.cn

Webpage: <http://wzhang0.gr.xjtu.edu.cn>

### Research interests:

- 1) Advanced electronic materials, Phase Change Memory Materials, Topological Insulators and Graphene Nanostructures;
- 2) Materials modelling and design from first principle simulations;
- 3) Materials characterizations at the nanoscale.



## Professor CHEN Kai 陈凯

Email: kchenlbi@gmail.com; kc\_xjtu@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4397](http://202.117.3.12:8090/en/people_show.php?id=4397)

### Research interests:

- (1) Elastic Strain Engineering
- (2) Development and application of synchrotron X-ray diffraction.



## Professor HAN Wei-Zhong 韩卫忠

Email: wzhanxjtu@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4370](http://202.117.3.12:8090/en/people_show.php?id=4370)

### Research interests:

Radiation effect in metals and alloys; Design of novel radiation tolerant materials; Mechanical behavior of metals in gaseous environment; Interface metallic materials; Dynamic loading of materials; Fatigue and fracture of materials.





# ACADEMIC TEAM

## Professor LIU Feng 刘峰

Email: [feng.liu@mail.xjtu.edu.cn](mailto:feng.liu@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4376](http://202.117.3.12:8090/en/people_show.php?id=4376)

### Research Interests:

International Joint Research Center of Soft Matter, Shaanxi Province, makes soft matter and functional nano-materials as the main research object, engaged in researches of molecular design and synthesis, self-assembly, functional nano-materials and device, facing the new energy, green environment and information science fields, make multi-disciplinary pioneering researches on the basic theory, synthesis, physical and chemical properties and device performance.



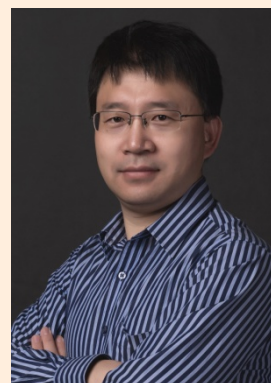
## Professor MI Shao-Bo 米少波

Email: [shaobo.mi@mail.xjtu.edu.cn](mailto:shaobo.mi@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4381](http://202.117.3.12:8090/en/people_show.php?id=4381)

### Research interests:

- (1) Microstructural properties of low-dimensional materials;
- (2) Interface structure and defects analysis at sub-angstrom resolution using (S)TEM;
- (3) Quantitative high-resolution electron microscopy and its application in material science.



## Professor LIU Gang 刘刚

Email: [lgsammer@mail.xjtu.edu.cn](mailto:lgsammer@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4377](http://202.117.3.12:8090/en/people_show.php?id=4377)

### Research interests:

- (1) The strengthening and toughening, deformation and fracture of heterogeneous metallic materials;
- (2) The strengthening and toughening, microstructure adjusting of age Al-alloy;
- (3) Mechanical properties characterizations of metallic film and multilayer film materials.



# ACADEMIC TEAM

## Professor JIANG Feng 江峰

Email: [jiangfeng@mail.xjtu.edu.cn](mailto:jiangfeng@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4373](http://202.117.3.12:8090/en/people_show.php?id=4373)

### Research interests:

My current research activity is focused on Bulk metallic glass:

Bulk metallic glass (BMG) possesses high strength hardness and elastic deformation limit and has long been regarded as a potential structural material. Currently my research efforts are most focused on:

- (1) Preparation and Mechanical Properties of Bulk Metallic Glass and its Composites;
- (2) Bulk and Micro- scale Compressive Properties of Metallic Glasses.



## Professor SONG Xiao-Long 宋小龙

Email: [songxl@mail.xjtu.edu.cn](mailto:songxl@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4386](http://202.117.3.12:8090/en/people_show.php?id=4386)

### Research interests:

- (1) Microstructure and properties of metal materials;
- (2) Fatigue and fracture at high temperature;
- (3) Stress corrosion;
- (4) Preparation and characterization of carbon nanotube, fullerene, and graphene.



## Professor YANG Jian-Feng 杨建锋

Email: [yang155@mail.xjtu.edu.cn](mailto:yang155@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4393](http://202.117.3.12:8090/en/people_show.php?id=4393)

### Research interests:

Engaged in advanced ceramics and composite materials, including:

- (1) Preparation process of new ceramics;
- (2) Microstructure, interface, properties and strengthening mechanism;
- (3) Strengthening and toughening mechanism of ceramic based nanocomposite;
- (4) Pore size, morphology and mechanical properties of porous ceramic materials;
- (5) Design and properties of ceramic-metallic composite material;



# ACADEMIC TEAM

## Professor HUANG Ping 黄平

Email: [huangping@mail.xjtu.edu.cn](mailto:huangping@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4372](http://202.117.3.12:8090/en/people_show.php?id=4372)

### Research interests:

- (1) Preparation and microstructure characterization of nanomaterials;
  - (2) Strengthening and toughening mechanisms, creep mechanics of metallic materials;
  - (3) Micromechanics and nanomechanics of homogeneous & heterogeneous materials;
  - (4) Surface modification and coating of metallic materials;
  - (5) Mechanical behavior characterization of amorphous alloy.
- 



## Professor FANG Liang 方亮

Email: [fangl@mail.xjtu.edu.cn](mailto:fangl@mail.xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4355](http://202.117.3.12:8090/en/people_show.php?id=4355)

### Research interests:

- (1) Physics and mechanics of abrasive wear process: Using computer simulating two-body and three-body abrasive wear process of materials. In the simulation process, a large scale molecular dynamics simulation and finite elements methods were used.
  - (2) Novel tribological materials: The researches are mainly concerned with wear resistant materials and materials with ultra-low or high friction coefficient. They are included in ceramics, polymer composite materials and white cast irons with high alloy contents.
  - (3) Li-ion and solar cell materials researches: I am also interested in the developments of graphite cathode materials,  $\text{LiMn}_2\text{O}_4$  anode materials and lamellar Li-rich anode materials. dye-sensitized solar cell and electrode interface characteristics are also involved in the researches.
  - (4) Numerical control routing technology for polystyrene foams (EPS)
  - (5) Heat transfer analysis during materials machining.
- 



# ACADEMIC TEAM

## Professor YANG Guan-Jun 杨冠军

Email: ygj@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4392](http://202.117.3.12:8090/en/people_show.php?id=4392)

### Research interests:

- (1) Solar cell: Innovative designs and preparations of new dye-sensitized solar cell and flexible solar cell;
  - (2) Thermal spraying technique: cold spraying, PP-PVD, vacuum cold spraying and hypersonic flame spraying;
  - (3) Advanced coating preparation technique: designs, preparations and properties characterizations photoelectric functional coatings and high temperature resistant, wear resistant coatings;
  - (4) Thermal barrier coating and corrosion prevention technique: new thermal insulation long-life thermal barrier coating.
- 



## Professor SUN Qiao-Yan 孙巧艳

Email: qysun@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4385](http://202.117.3.12:8090/en/people_show.php?id=4385)

### Research interests:

- (1) Cyclic deformation and damage mechanism of titanium alloys, zirconium alloys at low and high-cycle fatigue;
  - (2) Phase transformation and microstructural evolution of titanium alloy;
  - (3) Deformation modes and size effect in metallic crystals;
  - (4) Microstructure and mechanical behaviors of the alloys with nano-gradient surface layer.
- 



# ACADEMIC TEAM

## Professor SONG Zhong-Xiao 宋忠孝

Email: zhongxiaosong@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4387](http://202.117.3.12:8090/en/people_show.php?id=4387)

### Research interests:

- (1) Researches of integrated circuit copper connection, and the preparation and barrier property of its diffusion impervious layer;
- (2) Researches on the preparation and current-illumination characteristic of plasma display medium protective film;
- (3) Researches on the microstructure and properties of SED film;
- (4) Characteristic research of electro-deposition nanocomposite film;
- (5) Vacuum coating techniques of mould and cutting tool;
- (6) Development of high-performance high voltage electrical contact composite materials.



## Professor QIAN Jun-Min 钱军民

Email: jmqian@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4383](http://202.117.3.12:8090/en/people_show.php?id=4383)

### Research interests:

- (1) Biomaterials: molecular design and new preparation methods of tissue engineering materials, nano-drug carrier and target delivery, medical imaging, tumor 3D model building and so on;
- (2) Functional polymer materials: molecular design and synthesis of polymer, polymer solar cell and so on;
- (3) Design and preparation of high-performance polymer materials.



## Professor CAI Hong-Neng 蔡洪能

Email: hntsai@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4366](http://202.117.3.12:8090/en/people_show.php?id=4366)

### Research interests:

Metallic materials processing (Welding), mechanical behavior and numerical simulation of high-performance composite. Including stress-strain testing and simulation analysis in large-scale welding construction; macro and micro mechanical properties characterization, structure design and fatigue strength life acceleration experiment of fiber-reinforced polymer composite material.



# ACADEMIC TEAM

## Professor XI Sheng-Qi 席生歧

Email: xishq@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4389](http://202.117.3.12:8090/en/people_show.php?id=4389)

### Research Interests:

Mechanical alloying and novel materials:

- (1) The formation of supersaturated solid solution in immiscible alloy systems;
- (2) The superalloys based on FeNiCo-solid solution synthesized;
- (3) The photocatalytic degradation property of nano-TiO<sub>2</sub> doping with nano-ZnFe<sub>2</sub>O<sub>4</sub> synthesized by high-energy ball milling;
- (4) The solid state reaction in ternary Cu-Mo-Si alloy during MA and high performance copper alloy;
- (5) Development of Stable Nanofluids with Enhanced Thermal Efficiency for Application of Advanced Vehicles.



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## Professor LI Cheng-Xin 李成新

Email: licx@xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4375](http://202.117.3.12:8090/en/people_show.php?id=4375)

### Research interests:

- (1) Functional coating (high temperature resistance, corrosion resistance, oxidation resistance, thermal insulation, electron conduction, insulation);
- (2) Material interface and surface (bionics design, self-cleaning, lyophobic, hydrophily);
- (3) SOFC (anode, electrolyte and cathode materials; cell structure design; power generation system manufacture).





# ACADEMIC TEAM

## Professor GUO Da-Gang 郭大刚

Email: guodagang@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4368](http://202.117.3.12:8090/en/people_show.php?id=4368)

### Research interests:

- (1) Biomedical materials;
  - (2) Microstructure, properties and analysis evaluation of metallic materials: a. Titanium alloy; b. Al-Si alloy; c. Mg alloy;
  - (3) The materials for waste water treatment: Including preparations and properties of various heavy metal-ion absorbents, environmental protection packing;
  - (4) Environmental & Energy saving materials.
- 



## Professor ZHOU Gen-Shu 周根树

Email: zhougs@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4395](http://202.117.3.12:8090/en/people_show.php?id=4395)

### Research interests:

- (1) Material corrosion and protection;
  - (2) Design and preparation of new materials;
  - (3) Failure analysis and solidification technology.
- 



## Professor BAO Chong-Gao 鲍崇高

Email: cgbao@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4365](http://202.117.3.12:8090/en/people_show.php?id=4365)

### Research interests:

- (1) Research of wear-resisting, heat-resisting, corrosion-resisting metal alloy materials;
  - (2) Research of Ceramic/metal composite materials;
  - (3) Research of structural ceramics.
- 



# ACADEMIC TEAM

## Professor HE Lin 贺林

Email: helin@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4371](http://202.117.3.12:8090/en/people_show.php?id=4371)

### Research interests:

(1) The preparation of bulk amorphous alloys, Mechanical behavior and application research;

(2) Improve the glass-formation ability of bulk amorphous alloy by microalloying;

(3) Micromechanism of amorphous alloy plastic deformation.



## Associate Professor WANG Ji-Ping 王继平

Email: jpwang@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4412](http://202.117.3.12:8090/en/people_show.php?id=4412)

### Research interests:

Engaged in researches about carbon materials, designs of advanced ceramics and composite materials, preparation technique and mechanism, properties characterization and application. Being experienced in optimal design of composite materials structure, invention and improvement of preparation technique, micro analysis and properties detection.



## Associate Professor SHI Zhong-Qi 史忠旗

Email: zhongqishi@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4408](http://202.117.3.12:8090/en/people_show.php?id=4408)

### Research interests:

(1) Combustion Synthesis of Ceramic Powders;

(2) Ceramics with High Thermal Conductivity;

(3) Textured Ceramics;

(4) Machinable Ceramics;

(5) New Energy Nanomaterials.



# ACADEMIC TEAM

## Associate Professor HUANG Zhi-Fu 皇志富

Email: hzf@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4400](http://202.117.3.12:8090/en/people_show.php?id=4400)

### Research interests:

- (1) Toughening hard phases of metal wear resistant materials;
- (2) Fabrication of metal matrix wear resistant composites;
- (3) Design and Fabrication of corrosion and wear resistant Fe matrix alloys;
- (4) Synthesis of metallic ceramic.



## Associate Professor ZHANG Lin-Jie 张林杰

Email: zhanglinjie@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4423](http://202.117.3.12:8090/en/people_show.php?id=4423)

### Research interests:

- (1) Laser welding & Laser hybrid welding of copper, aluminum, titanium, ultra-high strength steel, etc.
- (2) Molten weld pool behavior prediction and control based on CFD simulation of various welding processes.
- (3) Metallurgical and mechanical optimization of thermal processed structures by combining the CFD simulations of processes and FEM analysis of structures.



## Associate Professor HE Cheng 何成

Email: hecheng@xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4399](http://202.117.3.12:8090/en/people_show.php?id=4399)

### Research interests:

- (1) Structures and quantum conduction of metallic nanowires under electric fields using first-principles;
- (2) Size effects on properties of metallic nanowires;
- (3) Glass-transition temperature of amorphous materials and related structure;
- (4) First-principles study of Zr-catalyzed hydrogen chemisorption on an Al surface.



# ACADEMIC TEAM

## Associate Professor ZHANG Li-Xue 张立学

Email: lxzhang1002@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4422](http://202.117.3.12:8090/en/people_show.php?id=4422)

### Research interests:

Investigation on phase transformation and properties of defects regulating ferroelectric/ piezoelectric intelligent material, including:

- (1) Defects inducing ferroelectric material singular aging behavior and recoverable electrostrictive strain;
- (2) Effects of defects configuration on ferroelectric Relaxor transition and dielectric behavior;
- (3) Exploitation of high-performance environmentally friendly piezoelectric material.



## Associate Professor ZHANG Lan 张兰

Email: lan.zhang@mail.xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4421](http://202.117.3.12:8090/en/people_show.php?id=4421)

### Research interests:

- (1) Surface modification of biometallic materials;
- (2) Bioactive ceramic coating.



## Associate Professor BAI Yu 白宇

Email: byxjtu@xjtu.edu.cn

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4396](http://202.117.3.12:8090/en/people_show.php?id=4396)

### Research interests:

- (1) The structure design, preparation and characterization of thermal barrier coatings used in aircraft engine and gas-turbine engines.
- (2) The theory and method of accurate control of thermal barrier coatings fabricated by plasma spraying system
- (3) The development and application of high efficiency supersonic atmospheric plasma spraying system.



# ACADEMIC TEAM

## Associate Professor ZHANG Gui-Feng 张贵锋

Email: [gfzhang@xjtu.edu.cn](mailto:gfzhang@xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/peoples.php?cat\\_id=1463](http://202.117.3.12:8090/en/peoples.php?cat_id=1463)

### Research interests:

- (1) Solid-phase welding technology and equipment:  
Transient liquid phase diffusion bonding/Friction stirring welding, hot pressure welding;
  - (2) Special hard solder of dissimilar metal: friction stir brazing (FSB), friction stir brazing, Semi-solid brazing, composite brazing;
  - (3) Metal matrix composite Welding, preparation and application;
  - (4) Advanced welding technology and equipment system;
  - (5) Advanced structure material welding metallurgy and welding materials.
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## Associate Professor LIU Hong 刘宏

Email: [hitliuhong@163.com](mailto:hitliuhong@163.com)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4403](http://202.117.3.12:8090/en/people_show.php?id=4403)

### Research interests:

Titanium and titanium alloy welding and connection technology.

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## Associate Professor SUN Kun 孙琨

Email: [sunkun@xjtu.edu.cn](mailto:sunkun@xjtu.edu.cn)

Webpage: [http://202.117.3.12:8090/en/people\\_show.php?id=4410](http://202.117.3.12:8090/en/people_show.php?id=4410)

### Research interests:

- (1) Theory of friction and wear: computational simulations of materials two-body and three-body abrasive wear processes; MD simulation of abrasive wear process in nano-scale; theory of dry sliding friction and wear
  - (2) Rapid formation technique: development of the rapid formation instrument and processing method; investigation of the processing path in rapid formation; development of the controlling system in rapid formation movement.
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## ACADEMIC TEAM