浙江大學
信息學部

AnnualReport 2014

Faculty of Information Technology
Zhejiang University

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浙江大學信息學部
Faculty of Information Technology, Zhejiang University

FIT

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學部概況

Introduction to FIT

信息学部涵盖了光电信息工程学系、信息与电子工程学系、控制科学与工程学系、计算机科学与技术学院、软件学院、生物医学工程与仪器科学学院。学部共有9个一级学科，其中光学工程、控制理论与工程、生物医学工程为国家重点学科，另有计算机应用和通信与信息系统2个二级学科为国家重点学科；拥有3个国家重点实验室，1个国家专业实验室，1个国家工程实验室，3个国家工程研究中心，共有20个研究所，主要开展信息领域科学和工程技术问题的创新研究。

Faculty of Information Technology (FIT) of Zhejiang University (ZJU) is comprised of three departments and three colleges, namely Department of Optical Engineering, Department of Information Science and Electronic Engineering, Department of Control Science and Engineering, College of Computer Science and Technology, College of Biomedical Engineering & Instrument Science and College of Software Technology. Currently, FIT has 9 primary disciplines, in which there are 3 national key disciplines, Optical Engineering, Control Science and Technology, and Biomedical Engineering. Besides, 2 secondary disciplines, Computer Applied Technology, Communication and Information Systems, are also national key disciplines. Under its administration, there are 3 State Key Laboratories, 1 National Special Laboratory, 1 National Engineering Laboratory, 3 National Engineering Research Centers, 20 research institutes, to devote in the research of science issues and innovation of technical problem in the area of information technology.

主任：鲍虎军
Dean : Bao Hujun

副主任：李尔平
Vice-Dean : Li Erping

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学部机构

ORGANIZATION

学术委员会

- **荣誉主任** 孙优贤
- **主　任**　鲍虎军　**副主任**　刘　旭
- **委　员**　仇　旻　朱建科　庄越挺　刘　承　孙守迁
  李尔平　李劲松　吴朝晖　张光新　张明暐
  张朝阳　陈　纯　陈耀武　周　昆　荣　冈
  钱　骏　徐　文　龚小谨　章献民　程　鹏
  童利民　严晓浪　应义斌　彭金荣

Academic Committee

- **Honorary Director**：Sun Youxian
- **Director**：Bao Hujun　**Vice- Director**：Liu Xu
- **Committee members**：

Qiu Min	Zhu Jianke	Zhuang Yueting
Liu Cheng	Sun Shouqian	Li Erping
Li Jingsong	Wu Zhaohui	Zhang Guangxin
Zhang Mingwei	Zhang Zhaoyang	Chen Chun
Chen Yaowu	Zhou Kun	Rong Gang
Qian Jun	Xu Wen	Gong Xiaojin
Zhang Xianmin	Cheng Peng	Tong Limin
Yan Xiaolang	Ying Yibin	Peng Jinrong

学术交流与合作专门委员会

- **主　任**　李尔平　**副主任**　仇　旻
- **委　员**　田景奎　张朝阳　陈积明　周　昆

Academic Exchange and Cooperation Committee

- **Director**：Li Erping　**Vice- Director**：Qiu Min
- **Committee members**：

Tian Jingkui	Zhang Zhaoyang	Chen Jiming
Zhou Kun		

人力资源专门委员会

- **主　任** 鲍虎军　**副主任** 刘　旭
- **委　员** 刘　承　童利民　刘向东　严晓浪　章献民
  仇　旻　庄越挺　刘　承　孙优贤　孙守迁
  李尔平　李劲松　吴朝晖　张光新　张朝阳
  陈　纯　陈耀武　周　昆　荣　冈　徐　文
  章献民　童利民

另外5名教授委员由学部在各院系学术委员会中随机抽取产生。

Human Resources Committee

- **Director**：Bao Hujun　**Vice- Director**：Liu Xu
- **Committee members**：

Qiu Min	Zhuang Yueting	Liu Cheng
Sun Youxian	Sun Shouqian	Li Erping
Li Jingsong	Wu Zhaohui	Zhang Guangxin
Zhang Zhaoyang	Chen Chun	Chen Yaowu
Zhou Kun	Rong Gang	Xu Wen
Zhang Xianmin	Tong Limin	

The other 5 committee members are selected randomly from the academic committee of departments/colleges.

学位委员会

- **主　任** 李尔平　**副主任** 杜一平
- **委　员** 王小松　仇　旻　许正平　孙守迁　李　光
  杨建义　何钦铭　何湘宁　陈　刚　林兰芬
  郑臻荣　赵民建　黄　海　黄志尧　鲍世宁

Academic Degrees Committee

- **Director**：Li Erping　**Vice- Director**：Du Yiping
- **Committee members**：

Wang Xiaosong	Qiu Min	Xu Zhengping
Sun Shouqian	Du Yiping	Li Guang
Yang Jianyi	He Qinming	He Xiangning
Chen Gang	Lin Lanfeng	Zheng Zhenrong
Zhao Minjian	Huang Hai	Huang Zhiyao
Bao Shining		

学部院系 Department & College

信息学部 Faculty of Information Technology

- 光电信息工程学系 Dept. of Optical Engineering
- 信息与电子工程学系 Dept. of Information Science & Electronic Engineering
- 控制科学与工程学系 Dept. of Control Science & Engineering
- 计算机科学与技术学院 College of Computer Science & Technology
- 生物医学工程与仪器科学学院 College of Biomedical Engineering & Instrument Science
- 软件学院 College of Software Technology

师资队伍

TALENT TEAM

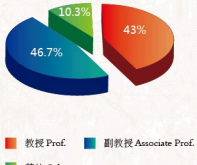
教职员工675人，其中正高183人，副高282人。有中国工程院院士3人，
教育部长江特聘教授10人
，973首席科学家5人，973青年科学家1人，国家自然科学基金杰出青年获得者12人，优秀青年基金获得者6人。国家自然科学基金创新群体2个，教育部创新团队2个。

2014年新增
973首席科学家1人，科技部创新人才推进计划中青年科技创新领军人才1人，长江学者特聘/讲座教授2人，杰出青年基金获得者1人，优秀青年基金获得者3人，浙江省特级专家2人，浙江省高校优秀教师1人。

FIT has 675 faculty members, including 183 full professors, 282 associate professors. There are 3 members of the Chinese Academy of Engineering,
10
Special-term professors
specially engaged in the National Cheung Kong Scholar Program, 5 Chief Scientists of National "973" Program, 1 Young Scientist of National "973" Program, 12 National Distinguished Youth Science Foundation Fellows, 6 National Excellent Youth Science Foundation Fellows. 2 Innovative Research Groups of the NSFC and 2 Innovative Research Teams of Ministry of Education have been constructed.
In 2014,

1 professor was appointed as Chief Scientist of National "973" Program, 1 professor was appointed as the Youth Technology Innovation Leader Talents of MOST. 2 professors were engaged in the National Cheung Kong Scholar's Program, 1 professor was appointed as National Distinguished Youth Science Foundation Fellows. 3 professors were appointed as National Excellence Youth Science Foundation Fellow, 2 faculty members were engaged in Zhejiang Province Outstanding Experts. 1 professor was bestowed the Zhejiang Province Excellence Teacher Prize.

师资队伍职称结构
Professional Structure



2014年新增 Awarded in 2014

专家教授


Dinesh Manocha


Romeo Ortega

专家教授


潘之杰
Pan Zhijie


程志渊
Cheng Zhiyuan

青年专家


赵 毅
Zhao Yi


倪 东
Ni Dong

中青年科技创新领军人才
The Youth Technology Innovation Leader Talents


童利民
Tong Limin

973首席科学家
Chief Scientist of National "973" Program


刘 旭
Liu Xu

长江学者教授
"Cheung Kong Scholar's Program" Professors

陈红胜
Chen Hongsheng

Junshan Zhang

杰出青年基金获得者
National Distinguished Youth Science Foundation Fellow

仇 旻
Qiu Min

优秀青年基金获得者
National Excellent Youth Science Foundation Fellows

陈 为
Chen Wei

赵春晖
Zhao Chunhui

戴道锌
Dai Daoxin

浙江省特级专家
Zhejiang Province Outstanding Experts

庄越挺
Zhuang Yueting

陈耀武
Chen Yaowu

浙江省高校优秀教师
Zhejiang Province Excellent Teacher

杨冬晓
Yang Dongxiao

教授
Professors

马云贵
Ma Yungui

史治国
Shi Zhiguo

赵春晖
Zhao Chunhui

杨再跃
Yang Zaiyue

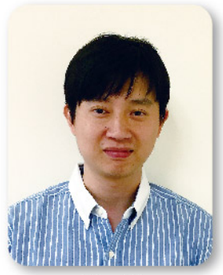
宋明黎
Song Mingli

副教授
Associate Professors

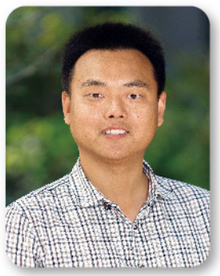

张　睿
Zhang Rui


龚小谨
Gong Xiaojin


胡　冰
Hu Bing


伍　赛
Wu Sai


张克俊
Zhang Kejun


张　寅
Zhang Yin


陈　星
Chen Xing

引进教师 New Faculty Members

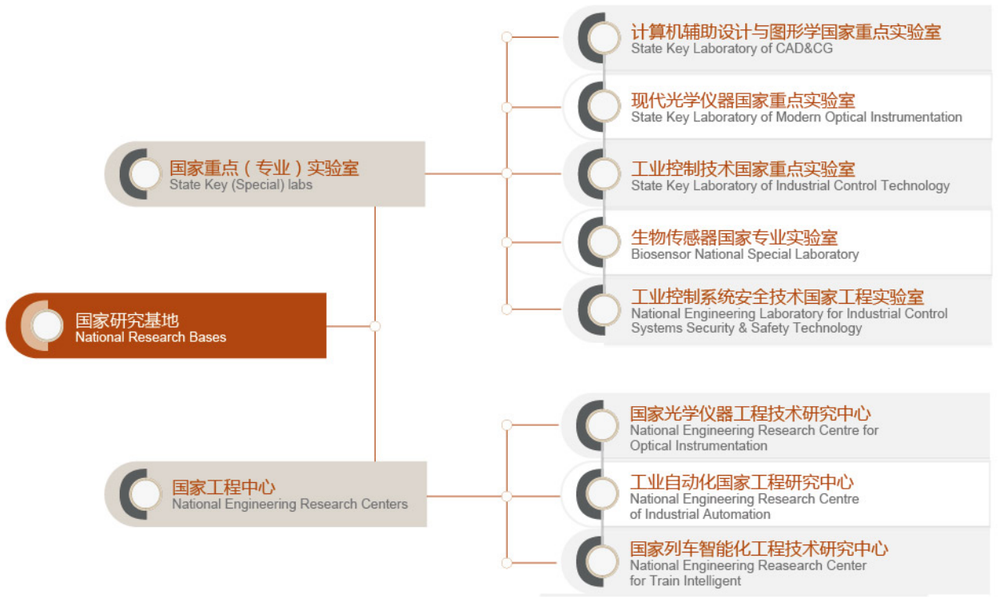
赵　毅 Zhao Yi	张　帆 Zhang Fan	程志渊 Cheng Zhiyuan	刘而云 Liu Eryun	李　玺 Li Xi	潘之杰 Pan Zhijie
廖子承 Liao Zicheng	倪　东 Ni Dong	贺诗波 He Shibo	吴争光 Wu Zhengguang	邢钱舰 Xing Qianjian	

科学研究
SCIENTIFIC RESEARCH

2014年度学部到校科研经费逾5.4亿，比上年度增长了17%，其中光电系、控制系、计算机学院超亿元。国家自然科学基金获批76项，合计经费7532万元，其中杰青1项，优青3项，重点项目3项，重大仪器2项。在研千万级项目21项，其中新获批973项目1项。被SCI收录论文706篇，其中ZJU100论文占9.0%，TOP论文占29.9%，5年平均IF≥10有7篇，5年被引超30次论文31篇。获国家授权发明专利308项。获国家技术发明二等奖1项，省部级科技进步一等奖3项。新增三个千万级地方合作基地（1个中心2个平台），1个浙江省创新团队。

In 2014, the total research funding of FIT reached over 540 million RMB, which increased by 17% than that in 2013. Moreover, the research funding for three departments was more than 100 million each. In total, 76 grants with the amount up to 75.32 million RMB were approved by the National Natural Science Foundation of China, including 1 national distinguished youth science project, 3 national excellent youth science projects, 3 national key projects, 2 national major instrument projects. Meanwhile, there were 21 ongoing grants with over ten million each, including 1 "973" project approved in 2014. 706 papers were indexed by SCI, including 9.0% published in ZJU100 journals, 29.9% published in ZJU top journals, 31 papers cited more than 30 times each in five years. In total, 308 national patents have been approved. There were 1 National Technology Invention Prize (second class) and 3 Provincial Sci & Tech Progress Prizes (first class). Furthermore, 1 innovative group of Zhejiang province and 3 joint-bases between ZJU and local government aided over ten million each were established in 2014.

国家研究基地 National Research Bases



研究所 Institutes

院 系 Department/College	研究所名称 Institute	所 长 Director
光电信息工程学系 Dept. of Optical Engineering	光学工程研究所 Inst. of Optical Engineering	冯华君 Prof. Feng Huajun
	光电信息及检测技术研究所 Inst. of Optoelectronic Information Detection Technology	章海军 Prof. Zhang Haijun
	光电子技术研究所 Inst. of Optoelectronic Technology	沈永行 Prof. Shen Yonghang
	光电显示技术研究所 Inst. of Optoelectronic Display	刘 旭 Prof. Liu Xu
	光及电磁波研究中心 Center for Optical & Electromagnetic Research	何赛灵 Prof. He Sailing
	先进纳米光子学研究所 Inst. of Advanced Nanophotonics	仇 旻 Prof. Qiu Min
	光学惯性技术工程中心 Center for Optical Inertial Technology	刘 承 Prof. Liu Cheng
信息与电子工程学系 Dept. of Information Science and Electronic Engineering	信息与通信工程研究所 Inst. of Information & Communication Engineering	黄爱苹 Prof. Huang Aiping
	电子电路与信息系统研究所 Inst. of Electronic Circuit & Information System	沈继忠 Prof. Shen Jizhong
	电子信息技术与系统研究所 Inst. of Electronic Information Technology &System	李尔平 Prof. Li Erping
	微电子与光电子研究所 Inst. of Microelectronics and Optoelectronics	骆季奎 Prof. Luo Jikui
控制科学与工程学系 Dept. of Control Science and Engineering	工业控制研究所 Inst. of Industrial Process Control	孙优贤 Prof. Sun Youxian
	自动化仪表研究所 Inst. of Automation Instrumentation	黄志尧 Prof. Huang Zhiyao
	智能系统与控制研究所 Inst. of Cyber-Systems and Control	苏宏业 Prof. Su Hongye
计算机科学与技术学院 College of Computer Science and Technology	人工智能研究所 Inst. of Artificial Intelligence	庄越挺 Prof. Zhuang Yueting
	计算机软件研究所 Inst. of Computer Software	陈 纯 Prof. Chen Chun
	计算机系统结构与网络安全研究所 Inst. of Computer System and Security	吴朝晖 Prof. Wu Zhaohui
	工业设计研究所 Inst. of Modern Industrial Design	孙守迁 Prof. Sun Shouqian
生物医学工程与仪器科学学院 College of Biomedical Engineering & Instrument	生物医学工程研究所 Inst. of Biomedical Engineering	李劲松 Prof. Li Jingsong
	数字技术及仪器研究所 Inst. of Digital Technology & Instrument	陈耀武 Prof. Chen Yaowu

科研亮点 Research Highlights

1. 新增国家重大科研项目 New National Important Projects

❶ 纳米分辨快速光学成像机理与技术的基础研究

光电系刘旭教授领衔的该项目获973计划资助。项目将针对纳米分辨光学信息快速获取技术开展原创性基础研究，建立突破光学信息获取极限的新型纳米分辨光学信息快速获取方法，发展自主创新的光学纳米分辨动态、无损、生命科学检测、成像技术，解决纳米分辨光学成像器件与系统的关键技术问题，引领我国高端光学成像仪器技术的发展。项目旨在为我国纳米技术与生物技术的长期规划和发展提供支撑，为解决远场纳米分辨光学信息快速获取的关键科学问题提供理论依据。

Mechanism and Basic Research on Fast Optical Imaging with Nanometer Resolution

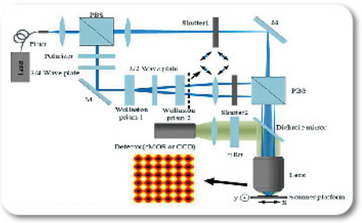
The project as the 973 program will carry out original basic researches direct at fast optical imaging techniques with nanometer resolution. It is to come up with new optical information acquisition methods beyond the diffraction limit, and to develop independent innovation technologies of dynamic, nondestructive optical detection and imaging for life science. Meanwhile, it is aimed to solve key technical questions in nanometer-resolution optical imaging devices and systems, and to lead the development of China's high-end optical imaging instrument technologies. The Project directed by Prof. Liu Xu in Dept. of Optical Engineering is designed to support China's long-term planning and development of nanotechnology and biotechnology fields, and to provide scientific basis for solutions of far field fast optical imaging with nanometer resolution.

❷ 并行纳米光场调控荧光辐射微分三维超分辨成像系统

光电系刘旭教授领衔的该项目获基金委重大仪器专项资助。如何从分子层面认识理解生命机理进而获得疾病的诊治是生物医学研究越来越受重视的关键环节。目前光学超分辨显微技术仍然难以在活体细胞实现长时程、实时、三维纳米尺度分辨，从而导致“囊泡运输”过程追踪等重大难题至今没能被很好的解决。本项目在我们前期发展的荧光辐射微分显微术的基础上，提出了新型宽场并行调控荧光辐射微分层析显微术，采用表面波调控、自适应光场补偿方法，以及新型纳米荧光增强器件等手段，研制具有自主知识产权的并行纳米光场调控荧光辐射微分三维超分辨成像系统，并在生物医学研究中实现应用。

Three-dimensional Fluorescence Emission Difference (FED) Super-resolution Imaging System Modulated with parallel Light Field at Nanoscale

Investigating the biological mechanism at the molecular level has become an increasingly significant procedure in curing the disease. Among all the existed super-resolution imaging techniques, there is no one that can be applied in live cell imaging and realize long time, large scale, real time, three-dimensional nanoscopy at the same time. As a result, several important issues such as the tracking of the transportation of vesicles are still remaining unsolved today. This project proposes a novel wide-field parallel-modulated fluorescence emission difference tomographic microscopy. Together with the research of surface wave modulation, focal pattern quality optimization using adaptive optics and fluorescence emission enhancement device, this project will develop and build a parallel nano-optical field modulated three-dimensional fluorescence emission difference super-resolution imaging system and apply it in biomedical investigations. This project directed by Prof. Liu Xu in Dept. of Optical Engineering was financed as the special vital instrument program of NSFC foundation in 2014.



❸ 双目视觉特性计算模型与三维视频视觉体验质量评价和处理

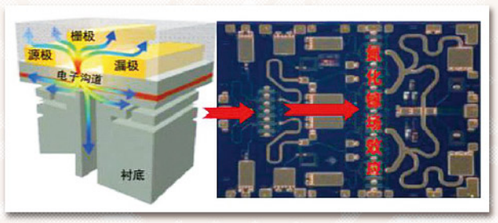
信电系虞露教授团队近年来开展了视觉感知、视频感知质量评价方法、以及面向视觉感知的视频处理方法研究，在技术标准化和产业化方面取得一批重要成果。2014年由虞露教授牵头，联合我校心理与行为科学系团队申请获得基金委重点资助的该项目将从视觉生理心理学研究成果入手，深入系统地探索双目视觉的信息处理机制，揭示双目视觉系统的信息感知特性，建立双目视觉特性理论与综合计算模型和双目视觉体验客观质量评价体制，提出面向双目视觉体验的三维视频处理方法。从而在现有的内容获取和显示呈现条件下，获得更合理的视频内容并提供更健康、舒适和令人愉悦的视觉体验。

Computational Modeling of Binocular Perceptual Features and 3D Video Assessment and Processing Toward Quality of Visual Experience

Research group of Prof. Yu Lu in Department of Information Science and Electronics Engineering involved in research on visual perception, objective visual perceptual quality assessment, and video processing algorithms, etc. in recent years and reached a series of standardization and industrialization achievements. In 2014, a project proposed by this group together with a team from the Department of Psychology and Behavioral Sciences of ZJU got financial support from the NSFC as a Key Project. This project aims to establish a computational model of binocular vision characteristics by systematically exploiting the mechanism of information processing in binocular vision system and revealing perceptual characteristics of binocular vision system, based on the research achievement of psychophysiology on human vision. On the basis of the comprehensive binocular visual characteristics model, an assessment system of quality of binocular visual experience (QobvE) is proposed and a series of 3D video processing methods are developed to improve or adjust the QobvE, which may be useful for 3D video content generation and production, compression and presentation, such that 3D video service can provide more reasonable and better content which results in healthy, comfortable and pleasant visual experience and promotes development of 3D video related industry.

❹ 电磁波激励条件下多尺度异质功能结构中多物理过程耦合建模与高效算法研究

信电系尹文言教授牵头的该项目获基金委重点项目资助。与北京应用物理与计算数学研究所合作，拟建立多尺度异质结构中包含介电常数、载流子迁移率、热导率、弹性模量、压电张量和热弹性系数等多参量间交叉耦合模型与本构方程，构造电磁、热和力全耦合物理模型体系；并且掌握不规则和薄层结构的高品质自适应网格生成与加密技术；灵活运用多层DDM策略，提出不同区域耦合界面处的数据交换和边界连接技术，发挥基于自适应高阶TDFEM等不同算法的综合优势，实现它们的高效集成与效率提升；提出大时间步长迭代加速收敛技术，实现多时间尺度问题的时空自适应快速求解，并且把握好算法精度和效率间的平衡关系，认清不同物理量间传递、数据转换对精度和效率的影响程度；开发拥有自主知识产权的多物理过程仿真软件，支撑在数百至数千处理器核高性能计算机平台上的大规模并行仿真，揭示电磁波激励诱导下异质功能结构中纳米到宏观尺度的多物理过程演变规律，以及性能退化、疲劳、击穿和失效机制。



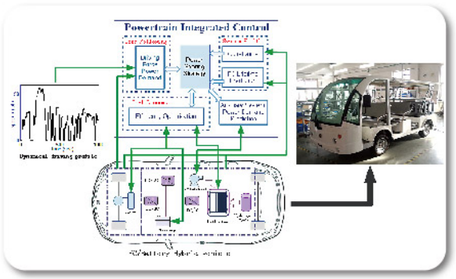
Modeling of Multiphysics Process with Mutual Coupling and Efficient Algorithm Research in Multi-scale Heterogeneous Structures with an Electromagnetic Excitation

This project directed by Prof. Yin Wenyan in Department of Information Science and Electronics Engineering was supported as the key project by NSFC. It aims at developing accurate modeling techniques and efficient algorithms for handling multiphysics processes with mutual coupling in typical multi-scale heterogeneous structures in the presence of an electromagnetic excitation, in particular including flexible electronic devices and integrated circuits, flexible MEMS and advanced GaN microwave transceivers. Its research tasks and targets are outlined as follows.

(1) A series of appropriate multi-parameter mathematical models with coupled constitutive equations will be derived for describing real multiphysics processes taken place in the heterogeneous structures, and the technique of adaptive mesh generation and encryption will also be developed for modeling irregular and thin layer geometries;
(2) Based on multi-level domain decomposition (DDM) strategy, an efficient integration of different algorithms will be performed so as to exploit their advantages comprehensively, where the coupling boundaries among different sub-domains will be treated in some appropriate ways;
(3) By considering multi-scale features of the multiphysics processes in time domain, both large time step iteration and time-space adaptive algorithms will be developed so as to achieve high computational efficiency with accuracy maintained at the same time;
(4) One multiphysics software will be built up for supporting massively parallel computing on high-performance computers with hundreds to thousands of processors utilized;

Therefore, we are able to reveal the evolution of multiphysics processes at different scales in the above heterogeneous structures, also including physical mechanisms of their performance degradation, fatigue and even breakdown. It is believed that this research can provide some key techniques for supporting the development of new flexible electronic devices and circuits, flexible MEMS and high power GaN transistors with high reliability, and international competitiveness of China in these key areas will be enhanced.

❺ 车用燃料电池系统与车辆动力学系统一体化建模与控制方法



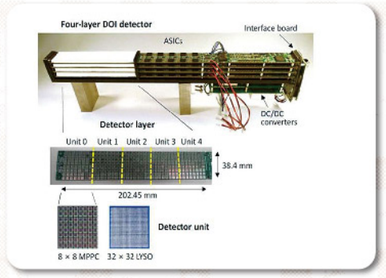
控制系陈剑负责的该项目获基金委重点项目资助。项目从探索动态工况下燃料电池电堆衰减规律入手，构建多尺度、多因素影响下的燃料电池寿命预测模型和混合动力系统模型，提出考虑电堆耐久性约束的燃料电池发电系统控制策略，对车用燃料电池系统和车辆动力系统进行一体化建模与控制，基于多源数据融合的系统进行线故障诊断与健康状态监控，并开发半物理仿真平台加以验证，以实现燃料电池车辆动力系统耐久性、动力性、经济性多目标一体化动态协调优化控制。

Unified Modeling and Control of Vehicular Fuel Cell Systems and Vehicle Dynamic Systems

A lifetime prediction model and a unified power system model under multi-scale and multi-factors are built through the study of decay mechanisms of the fuel cell stack under dynamic loads. Based on the models, a control strategy for fuel cell systems considering the durability constraint of the fuel cell stacks is proposed. Moreover, modeling and control of the vehicular fuel cell system and the vehicle dynamic system are unified with a proposed algorithm for online fault diagnosis and health monitoring. Besides, a hardware-in-the-loop simulation platform is under development to test and verify the performance of the unified modeling and control. A dynamically optimally coordinating control for fuel cell vehicles with multiple objectives (durability, dynamics, and fuel economy) will be achieved in this key project of NSFC foundation directed by Prof.Chen Jian in Dept.of Control Science and Engineering.

❻ 活体肿瘤组织代谢信号多参数时空动态成像系统研究

单凭单一生理指标的变化难以全面地判断肿瘤的病理生理状态，需要引入更多的病理生理参数综合评价。本研究的目标为开发活体肿瘤组织代谢信号多参数时空动态成像系统。2014年，在基金委重大仪器专项资助下，光电系刘华锋教授团队完成了高速PET探测器设计与验证，与传统的探测器系统相比，时间分辨上提高了80%之多，第一次实现了真正意义上的高速、高精度的晶体级时间校正。其次，以稀疏表达为基础，完成了结构字典约束的图像重建和同时实现放射性浓度/感兴趣区域的分割。文章发表在IEEE BME、 Physics in Medicine and Biology和Applied Physics 上。



Dynamic Funtional Imaging of Tissue in Vivo by a Multi-tracer PET System

The metabolism of substances in a tumor is inherently time-dependent and involves a variety of physiological and biochemical processes. Thus, the ability to observe physiological and biochemical processes with each tracer in the living organism in a dynamic, simultaneous mode opens up fascinating possibilities for both fundamental research and routine diagnostic applications. In hardware aspect, a high-speed, high-accuracy timing calibration method has been developed, where the timing resolution was improved 80%. Given the poisson nature of photo counting measurements, Prof. Liu Huafeng group from Dept. of Opital Engineering present a reconstruction framework that integrates sparsity penalty on dictionary into a maximum likelihood estimator under the support as the special vital instrument program of NSFC foundation in 2014.

2. 重大科研成果及进展 Research Achievements and Significant Progress

❶ 汽车电子嵌入式平台技术及应用

面对汽车电子领域“强实时、高效率、低排放”的挑战，计算机学院吴朝晖教授领衔的项目团队首创了调度优化、混合模型设计和变压补偿控制三大核心技术，攻克了实时响应、数据融合和精确喷射三个国际难点，研制成功汽车电子嵌入式平台并实现产业化。整体技术达到国际先进水平，在任务切换、工具集成和排放控制等方面处于国际领先，2014年获国家技术发明奖二等奖。项目成果广泛应用于卡车、轿车电控系统开发，近三年新增产值14.98亿元，间接经济效益500余亿元。

The Techniques and Applications of the Automotive Electronics Embedded Platform

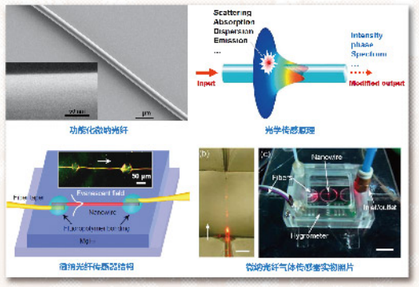
Faced by the challenges to make automotive electronics "hard real-time, high efficiency, low emission", the project team led by Prof. Wu Zhaohui from College of Computer Science and Technology developed three core technologies to address these challenges, including scheduling optimization, hybrid-model design and variable voltage compensation control, and overcame international difficulties in real-time response, data integration and accurate injection. On the basis of these core technologies, the team developed an automotive embedded platform and achieved successful commercialization. The overall project reached the international advanced level, and the specific techniques of task switching, tool integration and vehicle emission control reached the international leading level. In 2014, the project was awarded the Second Prize of the National Technological Invention Award. The project results have been widely deployed in electronic control systems in trucks and sedans. During the past three years, an added value of 1.498 billion RMB and indirect economic benefits of more than 50 billion RMB have been achieved.

❷ 微纳光纤光子学及其应用基础研究

光电系童利民教授负责的该项目获2014年度浙江省科学技术奖一等奖。项目结合光纤光学和纳米技术，在微纳光纤光学传输模型、结构制备及其器件应用方面开展了系统深入的研究，提出了微纳光纤近场耦合新方法，解决了高折射率及金属纳米线的超紧凑、高效率耦合激发问题；提出了微纳光纤折射率传感模型，研制成功小尺寸、高灵敏度、快响应、低功耗微纳光纤传感器；提出有源掺杂微纳光纤制备新技术，研制成功国际上第一个微纳光纤激光器，并进一步基于倏逝波耦合增益的新方法实现了超小型微纳光纤染料激光器。上述工作为发展新型微纳光子技术及器件提供了新技术和新途径，对国际上微纳光纤研究方向的发展起到了重要的推进和引领作用。

Microfiber Photonics and Its Applications

The project directed by Tong Limin group in Department of Optical Engineering won the Zhejiang Provincial Science and Technology Award (the first class) in 2014. By merging fiber optics and nanotechnology, the project carried out systematical research on wave guiding, fabrication and device applications of optical microfibers and nanofibers, with major outcomes ranging from novel near-field coupling technique, active microfiber fabrication, high-sensitivity fast-response optical sensors to miniaturized microfiber lasers. These results open new opportunities to novel photonic technology and devices on micrometer or nanometer scale, and have pushed the frontier of microfiber research worldwide.



❸ 复杂电子服务系统关键技术研究与应用

计算机学院吴朝晖教授领衔的该项目获浙江省科技进步奖一等奖。项目针对复杂电子服务系统面临的“海量规模、动态演化、跨界协同”的三大挑战，围绕海量数据存储、动态服务集成、高效服务获取、复杂服务协同四大关键技术展开研究，通过与龙头企业的产学研联合攻关，研制复杂服务系统的基础支撑平台、典型行业的复杂服务应用系统两大类平台软件系统，获12项软件著作权，授权26项发明专利。成果应用在互联网（移动）、现代金融等4大领域15家企业的复杂电子服务系统中，支撑电信翼聊/易信、茁壮数字电视系统等30余个复杂电子服务系统，产生显著社会经济效益。

Research and Application of Complex E-Service System

Modern service industry is an important direction for industrial upgrading in our country and Zhejiang province. Electronic service (E-Service), which is relying on network technology and served online, is an important form of modern service industry. But there are many challenges for the complex E-service system, such as large-scale, dynamic evolution, crossover collaboration. To solve these challenges, the group directed by Prof.Wu Zhaohui conducts some research works around massive data storage, dynamic service integration and efficient service discovery, complex services collaboration. Combining the famous E-Service companies, we developed the two software platform to facilitate the E-Service systems, one is the general foundation platform, the other is the domain-related foundation platform. We achieved 12 software copyrights, authorized 26 patents. Our systems have been applied in the four major areas of modern service industry, such as the internet, modern finance service. There are more than 30 typical application systems, for example, China Telecom Yi-Talk, iPanel digital television system.

4 智能化成套专用控制装置及系统的研发与应用

控制系王文海领衔的该项目获教育部高等学校科技进步一等奖。工业控制装置及系统是工业生产安全可靠和高效优化运行的重要保证。本项目经过15年研究开发和推广应用，解决了高安全性、高可靠性、高精确性等三大难题，成功研制出具有智能化、成套化、专用化功能的智能化成套专用控制装置，形成了自主知识产权的核心技术体系，打破了国外的技术垄断，保障了经济产业安全。成果成功应用于能源、环保等重大工程2000余套，同时产品已出口印度等多个国家，具有国际市场竞争优势；近三年新增产值35.13亿元，利税15.01亿元。

Research and Applications of the Series Intelligent Customized Control System

Industrial control equipments and industrial control systems are the important part of the industrial equipments in the areas of energy, environmental protection, chemicals, defense and so on. After 15 years of technology development and applied research, Prof.Wang Wenhai group in Dept.of Control Science and Engineering have solved the three key problems of high security, high reliability and high accuracy. By solving these key problems through significant innovations, they have established the serialized intellectualized customized control system with independent intellectual property rights which have broken the foreign technology monopol and ensured the industrial security. The project achievements have successfully applied to more than 2000 units in the industrial equipments in the areas of energy, environmental protection and so on. The advanced control equipments and system shave the international market competitiveness, and have been exported to India and other foreign countries. In the nearly three years, output value of 3.513 billion RMB and economic benefit value of 1.501 billion RMB were created.

5 探月三期地月合影双分辨率光学相机技术

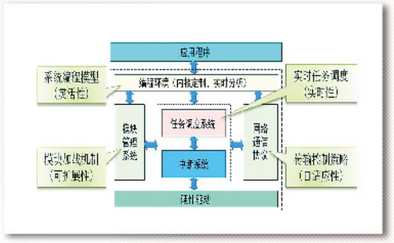
光电系徐之海团队提出了一种双分辨率相机的原创性设计概念并成功研制了原理样机。该相机可在同一时刻对同一场景实现两个视场的不同分辨率成像，破解了光学视场与分辨率相互制约的难题。双分辨率相机搭载我国探月三期飞行试验器，于2014年10月28日在距地球1.2万公里处成功进行了我国首次地月合照。11月9日，在距地球54万公里、距月球92万公里处，完成了人类在该位置上的首次地月合影。负责探月工程的探月与航天中心予以了高度评价“……双分辨率相机工作可靠，镜头成像清晰，图像色彩鲜艳，出色完成了任务。……徐之海教授团队……在前期论证中完成了原理演示，并负责相机飞行产品中的光学系统设计和制造，在探月工程三期飞行试验器的双分辨率相机研制中做出了突出贡献。”

Dual Resolution Camera Successfully Acquired Group Photo of The Earth and The Moon in The Third-step China Moon Mission.

Prof. Xu Zhihai research team from Department of Optical Engineering has proposed a novel design of dual resolution space camera which can acquire two field of view images with different resolving power for the same scene at the same time. It avoids the problem of contradiction between the wide field of view and high resolution in a conventional optical camera. At 16:00 pm November 9, 2014, this camera took pictures of the Earth and the Moon at the distance of 540,000Km to the Earth and 920,000 Km to the Moon, which is the first time of mankind to get group photos at this position in the space. Lunar Exploration and Space Engineering Center, the headquarters of China moon mission, gave a high appraisal to Xu Zhihai team's research work, “the dual resolution camera did excellent job, its optical lens took sharp and colorful images in the mission. …… They accomplished the demonstration prototype, designed and manufactured the optical system of the flying product. They have made prominent contribution to the dual resolution camera in the testing space-craft of the third-step China moon mission.”

6 面向无线传感网络的嵌入式操作系统设计

嵌入式传感网成为物理世界信息感知的核心技术之一，得到了国内外学者的广泛关注。面向无线传感网的嵌入式操作系统可以为大量应用提供横向开放的接口，成为传感网技术创新和规模化应用的重要推动力。计算机学院董玮副教授针对传统传感操作系统编程难度较大、实时性不高、软件更新困难、网络带宽利用率低等问题展开研究，设计并实现了基于混合调度模型和实时任务调度的传感网操作系统SenSpire OS。相关成果发表于IEEE T COMPUT，IEEE TPDS，IEEE T MOBILE COMPUT及会议SIGMETRICS， INFOCOM等上。其博士论文获2013年度全国百篇优博论文提名。

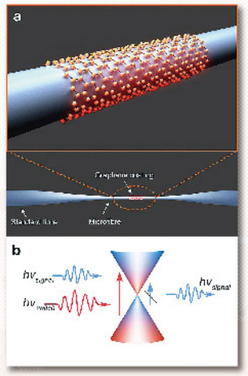


Design of Embedded Operating Systems for Wireless Sensor Networks

As a key technology for sensing the physical world, embedded sensor networks attract wide research attention in recent years. Operating systems for sensor networks can provide a wide range of APIs for various applications, propelling future technological innovations. This work focuses on four key issues in traditional sensor network operating systems, i.e., user-friendly software programming, real-time task scheduling, efficient software update, and high bandwidth utilization. A novel operating system（SenSpire OS）is proposed to address these issues. SenSpire OS is based on a hybrid scheduling model and a real-time scheduling algorithm. Related works have been published in prestigious journals and conferences. Dr. Dong from College of Computer Science and Technology was nominated for the National Excellent Doctorial Dissertation Award.

7 微纳光纤与纳米线光子器件

光电系童利民教授研究组在微纳光纤与纳米线光子器件研究方面取得重要进展。基于石墨烯复合微纳光纤结构，实现调制速率达到200GHz的石墨烯超快全光调制器，在超快光信号处理等方面具有潜在应用价值，发表在《Nano Letters》期刊，被选为“ACS Editor's Choice”，并入选ISI高引论文。基于硫化镉纳米线波导的横向辐射倍频效应，研制成功单纳米线超快光学相关器件，在超小型、可集成超快光脉冲测量等系统中具有应用前景，发表在《Nano Letters》期刊。受化学领域权威综述期刊《Accounts of Chemical Research》邀请，撰写了纳米线光学导波及其光子学应用方面的综述文章，发表在《Acc. Chem. Res.》期刊，提出了纳米线波导中“损耗-约束-带宽”的平衡制约关系，以及纳米线波导与器件的未来挑战和机遇。



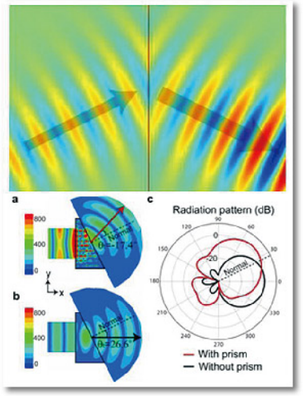
Microfiber and Nanowire Photonic Devices

Prof. Tong Limin group in Department of Optical Engineering have made noticeable progress in microfiber and nanowire photonic devices. Based on a graphene coated microfiber, the group has experimentally demonstrated an ultrafast all-optical modulator with bandwidth up to 200 GHz, which is highly potential for ultrafast optical signal processing. The result was published in Nano Letters[Nano Lett. 14, 955 (2014)], and was highlighted as “ACS Editor's Choice” and ISI highly cited paper. Based on trasverse second harmonic generation in a CdS nanowire, the group reported a single-nanowire optical correlator for on-chip ultrafast pulse measurement with ultra compactness [Nano Lett. 14,3487 (2014)]. Invited by editor of the renown review journal Accounts of Chemical Research, the group published a review article in nanowire waveguides and their photonic applications, reported the “loss-confinement-bandwidth” balance in nanowire waveguides, and discussed the future challenge and opportunity in this field.

3. 年度TOP论文 Recommended Papers

1 Microwave Gain Medium with Negative Refractive Index

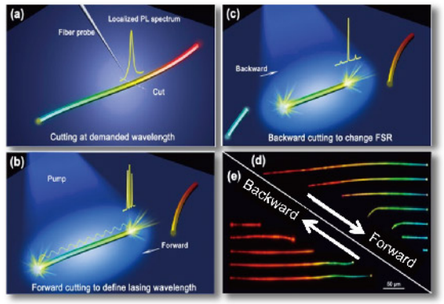
作者：Ye, Dexin; Chang, Kihun; Ran, Lixin; 等.
来源：NATURE COMMUNICATIONS 卷: 5 文献号: 5841 出版年: DEC. 2014



Realizing metamaterials with negative refractive index has been in the center of attention over the past decades, particularly due to some exceptional prospects that materials with such an exotic electromagnetic property can have for and in superlens, cloaking. However, the inevitable loss due to the strongly resonant nature of metamaterials plagues many of their exciting potential applications. To reduce or eliminate the losses a promising way forward has been the strategy to compensate all losses by combining and thus enhancing metamaterials with gain materials. While such claims now clearly have been proven to be feasible on the basis of fundamental theoretical argumentations as well as through several experimental studies demonstrating loss-compensation in negative index materials, the theoretically predicted over-compensation and amplification was still awaiting experimental confirmation. The present work takes this important step forward. Through a combination of full-wave simulation and experimental measurement a specifically fabricated sample of a negative index metamaterial is shown to exhibits a negative refractive index and a net gain. It shows that a stable net gain can be achieved in volumetric negative-index materials, proposing a potential solution for the critical challenge current metamaterials technology faces in practical applications.

2 Broadly Defining Lasing Wavelengths in Single Bandgap-Graded Semiconductor Nanowires

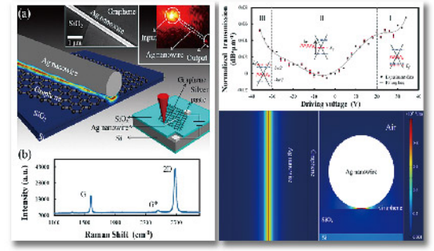
作者：Yang, Zongyin; Wang, Delong; Meng, Chao; 等.
来源：NANO LETTERS 卷: 14 期: 6 页: 3153-3159 出版年: JUN. 2014



As the core elements in nanophotonics, micro-/nano light emitting devices have great potential applications in high density optoelectronics, high sensitive sensing and high resolution imaging systems, which have attracted a lot of interests in the past decades. While for their practical applications, control and optimization of the parameters are of great significance. In 2013,Prof. Qing Yang's group firstly utilized absorption-emission-absorption(AEA) process to achieve wavelength tailoring (40 nm) on a single non-doped CdSe NW. Recently, according to the localized photoluminescence spectra, they first demonstrate the ability to define lasing wavelengths over a wide range (up to 119 nm) based on an individual bandgap graded CdSSe NW by forward cutting the NW from CdSe to CdS end. The variable spectral range covers red and green colors. Furthermore, free spectral range (FSR) and modes of the obtained lasers could be controlled by backward cutting the NW from CdS to CdSe end step-by-step. Interestingly, single-mode NW laser with predefined lasing wavelength is realized in short NWs because of the strong mode competition and increase in FSR. The combination of wavelength and mode selectivity in NW lasers may provide a new platform for the next generation of integrated optoelectronic devices.

3 Electrical Tuning of Surface Plasmon Polariton Propagation in Graphene-Nanowire Hybrid Structure

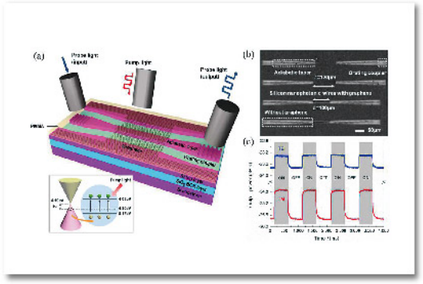
作者：Qian, Haoliang; Ma, Yaoguang; Yang, Qing.
来源：ACS NANO 卷: 8 期: 3 页: 2584-2589 出版年: MAR. 2014



Due to the ability to produce highly enhanced optical fields below the diffraction limit, surface plamon polariton(SPP) has wide scientific and technological applications. It is desired to have the ability to dynamically manipulate SPPs for their practical applications in modern information and communication technologies, preferably by applying an electrical bias. However, even noble metals, which are widely regarded as the best candidate for plasmonic materials, are hardly tunable simply through electrical operation partially because of the difficulties in changing the carrier density. Prof. Qing Yang's group demonstrates a dynamic surface plasmonic modulation based on grapheme-nanowire (grapheme-NW) hybrid structures in the visible light range. Through careful simulation and systematical experimental investigation, they found that the dual-confinement effect of charge density and electromagnetic energy around the vicinity of the NW will dramatically enhance the light-matter interaction and increase the Fermi level shifting, which are the key roles for bringing the optical response of the device to the visible range. As the SPP mode area can be further squeezed, the device may provide a way of fabricating ultracompact nanophotonic devices and may find its applications in integrated optical circuits, nanoscaled laser sources, optical communications, etc. The paper was published on <ACS Nano>, [ACS Nano 8, 2584–2589 (2014). And the paper was selected by the editor as "ACS Editors' Choice". The first author Haoliang Qian was honored the best 100 bachelor degree thesis.

4 Local and Non-local Optically Induced Transparency Effects in Graphene-Silicon Hybrid Nanophotonic Integrated Circuits

作者：Yu, Longhai; Zheng, Jiajiu; Xu, Yang; 等.
来源：ACS NANO 卷: 8 期: 11 页: 11386-11393 出版年: NOV. 2014

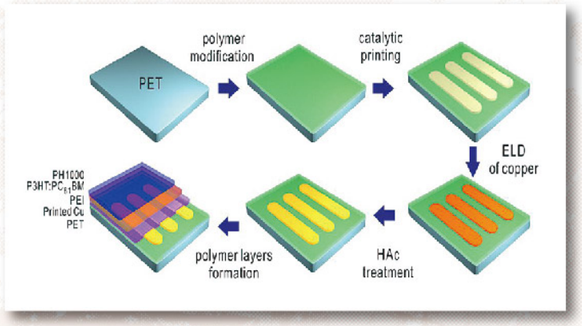


Graphene is well-known as a two-dimensional sheet of carbon atoms arrayed in a honeycomb structure. It has many unique and fascinating properties, such as ultra-high carrier mobility at room temperature, zero-bandgap and electrochemically tunable Fermi level, broadband light absorption. All these make graphene very useful for realizing novel optoelectronic devices and applications, including photodetectors, solar cells, and modulators. In order to enhance light-graphene interactions, a promising approach is to combine a graphene sheet with optical waveguides, such as silicon nanophotonic wires considered here. In this paper we report local and non-local optically induced transparency (OIT) effects in graphene-silicon hybrid nanophotonic integrated circuits for the first time. A loss reduction of the hybrid nanophotonic wire is achieved over a broad wavelength range, when a pump light illuminates the graphene sheet both locally and non-locally. Moreover, the pump power density for the present OIT effect is extremely low, only ~2W/cm2, which is several orders lower than the power density (up to 0.5~0.7×106W/cm2) needed for the saturated absorption effect of graphene reported previously. This implies a totally new mechanism, involving light absorption by the silicon and photo-carrier transport through the silicon-graphene junction. The present OIT effect enables low power, all-optical, broadband modulation and switching locally and non-locally.

5 Full-solution Processed Flexible Organic Solar Cells Using Low-Cost Printable Copper Electrodes

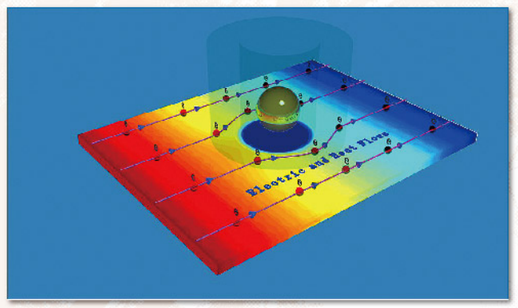
作者：Li, Kan; Zhen, Hongyu; Niu, Liyong; 等.
来源：ADVANCED MATERIALS 卷: 26 期: 42 页: 7271-7278 出版年: NOV. 2014

Flexible organic solar cells (OSCs) have attracted remarkable attention in the past two decades because of their unique advantages and commercial application prospect. Recently, The Prof. Li Haifeng Group with their cooperator form Hong Kong Polytechnic University firstly develop the full-solution processed flexible organic solar cells usinglow-cost printable copper electrodes.In commercial manufacture, copper possesses the advantages of high electrical conductivity and lowcost, which is very promising electrode material. However, the instability of copper's chemical property leads to a technological difficulty to achieve good interface in semiconductor devices. This work successfully overcomes this difficulty and the fabricated device performance has reached the lead level in the congenericdevices. More importantly, benefited from the features of PAMD (polymer-assisted metal deposition) metal printing process, the devices based on printed copper electrodes present excellent stability for mechanical deformation.



6 Experimental Demonstration of a Multiphysics Cloak: Manipulating Heat Flux and Electric Current Simultaneously

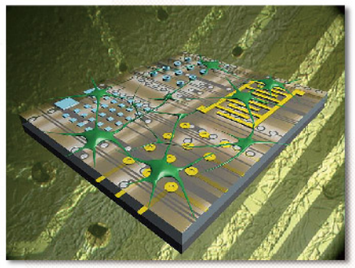
作者：Ma, Yungui; Liu, Yichao; Raza, Muhammad; 等.
来源：PHYSICAL REVIEW LETTERS 卷: 113 期: 20 文献号: 205501 出版年: NOV. 2014



Invisible cloaks have been widely explored in many different physical systems but usually for a single phenomenon for one device. In this Letter we make an experimental attempt to show a multidisciplinary framework that has the capability to simultaneously respond to two different physical excitations according to predetermined scenarios. As a proof of concept, we implement an electric-thermal bifunctional device that can guide both electric current and heat flux "across" a strong 'scatterer' (air cavity) and restore their original diffusion directions as if nothing exists along the paths, thus rendering dual cloaking effects for objects placed inside the cavity. This bifunctional cloaking performance is also numerically verified for a line-source nonuniform excitation. Our results and the fabrication technique presented here will help broaden the current research scope for multiple disciplines and may pave a way to manipulate multiple flows and create new functional devices, e.g., for on-chip applications.

7 Cell-Based Biosensors and Their Application in Biomedicine

作者：Liu, Qingjun; Wu, Chunsheng; Cai, Hua; 等.
来源：CHEMICAL REVIEWS 卷: 114 期: 12 页: 6423-6461 出版年: JUN. 2014



Cell-based biosensors combine the living cells and sensors or transducers for cellular physiological parameter detection, pharmaceutical effect analysis, environmental toxicity test, etc. In contrast to molecule-based approaches, cell-based biosensors have a broad spectrum of detecting capabilities. Moreover, in addition to analyte sensing and detecting, cell-based biosensors can provide the advantages of rapid and sensitive analysis for in-situ monitoring with cells. This review systematically discussed cell-based biosensor theories, technologies, and developments. It combined descriptions of microelectronics and information technology with chemical and biological fundamentals to introduce the novel principles and applications of cell-based biosensors. The review also provided a topical description of the research progress of cell-based biosensors over the past two decades. In addition, many innovative applications of cell-based biosensors, in areas such as biomedicine, were detailed. The principles, developments, and typical applications of microelectrode array (MEA), electrical cell impedance sensing (ECIS), field effect transistor (FET), light-addressable potentiometric sensors (LAPS), patch clamp chips, quartz crystal microbalance (QCM), and surface plasmon resonance (SPR) were introduced and discussed in detail with concluding points and future prospects. Some emerging technologies involve combining cell-based biosensors with up-to-date technologies in science and engineering were discussed in detail, including the use of nanotechnology, microelectronics, and molecular biology to fabricate the integrated, intelligent, and bio-inspired biosensors used for cellomics studies.

8 epiC: an Extensible and Scalable System for Processing Big DataepiC

作者：Dawei Jiang; Gang Chen; Beng Chin Ooi等.
来源：IEEE VLDB 出版年: SEP. 2014

This paper presents epiC, an extensible system to tackle the Big Data's data variety challenge. epiC introduces a general Actor-like concurrent programming model, independent of the data processing models, for specifying parallel omputations. Users process multi-structured datasets with appropriate epiC extensions, the implementation of a data processing model best suited for the data type and auxiliary code for mapping that data processing model into epiC's concurrent programming model. Like Hadoop, programs written in this way can be automatically parallelized and the run- time system takes care of fault tolerance and inter-machine communications. We present the design and implementation of epiC's concurrent programming model. We also present two customized data processing model, an optimized MapReduce extension and a relational model, on top of epiC. Experiments demonstrate the effectiveness and efficiency of our proposed epiC. This paper (supervisor: Prof. Chen Gang) obtained the Best Paper Award of IEEE VLDB 2014, which is the first time for Chinese scholars.

9 Stochastic Synchronization of Markovian Jump Neural Networks with Time-varying Delay Using Sampled-data

作者：Wu, Zheng-Guang ; Shi, Peng; Su, Hongye等.
来源：IEEE TRANSACTIONS ON CYBERNETICS 卷: 43 期: 6 页: 1796-1806
出版年: DEC 2013

In the paper, a Lyapunov functional including a new looped-function is proposed based on the essential characteristic of sampled-data control systems, and the algebraic relationship between sampling interval and sampling instant is also given, which break through the requirement of positive definiteness and radial unboundedness of traditional Lyapunov functional. The sampled-data control problem is solved for nonlinear systems, and the design method of sampled-data controller with rather small conservatism is obtained. This paper was also on the list of 100 TOP papers of China in 2013.

人才培养

EDUCATION

学部共有11个本科专业，8个一级学科博士学位授予点，1个一级学科硕士学位授予点，21个二级学科博士学位授予点，22个二级学科硕士学位授予点。在校生（包括本科生和研究生）6379人，在国内外各类学科竞赛中成绩优异，本科生深造率达57%。

There are 11 undergraduate programs, 8 doctorate programs of primary discipline, 1 master program of primary discipline, 21 doctorate programs and 22 master programs of secondary discipline. About 6379 full-time undergraduate and graduate students enrolled in the faculty. They have made outstanding achievement in various international and domestic disciplinary competitions. More than 57% undergraduate students can continue their studies at home or aboard.

本科专业 UG Program

院　系 Department/College	本科专业 UG Program
光电信息工程学系 Dept. of Optical Engineering	光电信息科学与工程 Optoelectronic Information Science and Engineering
信息与电子工程学系 Dept. of Information Science and Electronic Engineering	信息工程 Information Engineering
	电子科学与技术 Electronic Science and Technology
控制科学与工程学系 Dept. of Control Science and Engineering	自动化 Automation
计算机科学与技术学院 College of Computer Science and Technology 软件学院 College of Software Technology	计算机科学与技术 Computer Science and Technology
	数字媒体技术 Digital Media Technology
	软件工程 Software Engineering
	工业设计 Industrial Design
	产品设计 Product Design
生物医学工程与仪器科学学院 College of Biomedical Engineering & Instrument Science	生物医学工程 Biomedical Engineering
	测控技术与仪器 Measurement and Control Technology and Instruments

学科 Disciplines

光学工程 Optical Engineering
光学工程 Optical Engineering
光通信技术 Optical Communication Technique

仪器科学与技术 Instrument Science and Technology
测试计量技术及仪器 Measuring and Testing Technologies and Instruments
电子信息技术及仪器 Electronic Information Technologies and Instrument

电子科学与技术 Electronics Science and Technology
物理电子学 Physical Electronics
微电子学与固体电子学 Microelectronics and Solid State Electronics
电路与系统 Circuits and Systems
电磁场与微波技术 Electromagnetic Field and Microwave Technology

信息与通信工程 Information and Communication Engineering
通信与信息系统 Communication and Information Systems
信号与信息处理 Signal and Information Processing

控制科学与工程 Control Science and Engineering
控制理论与控制工程 Control Theory and Control Engineering
检测技术与自动化装置 Detection Technology and Automatic Equipment
系统工程 Systems Engineering
模式识别与智能系统 Pattern Recognition and Intelligent Systems
导航、制导与控制 Navigation, Guidance and Control

计算机科学与技术 Computer Science and Technology
计算机应用技术 Computer Applied Technology
计算机系统结构 Computer Systems Organization
数字化艺术与设计 Digital Art and Design
电子服务 Electronic Service

软件工程 Software Engineering
计算机软件与理论 Computer Software and Theory

生物医学工程 Biomedical Engineering
生物医学工程 Biomedical Engineering

设计学 Design
设计艺术学 *Art of Design

*只有硕士点
*Only master program

学生 Students

学生 Students \ 院系 Department/College		光电信息工程学系	信息与电子工程学系	控制科学与工程学系	计算机科学与技术学院	软件学院	生物医学工程与仪器科学学院	合计
在校生 Enrollments	博士生 Doctor	230	216	198	463	/	169	1276
	硕士生（全日制） Master	322	423	396	905	453	283	2782
	本科生（11级、12级） Undergraduate	290	620	271	825	/	315	2321
招生数 Freshmen	博士生 Doctor	51	46	39	80	/	36	252
	硕士生（全日制） Master	106	137	124	305	202	93	967
	本科（2013级） Sophomore	140	296	144	418	/	142	1140
毕业生 Graduates	博士 Doctor	24	30	35	59	/	26	174
	硕士（全日制） Master	72	126	118	288	182	75	861
	本科 Undergraduate	123	267	130	371	/	173	1064
本科生深造与对外交流 Further Study and International Exchange of Undergraduate	毕业生* Graduate*	113	257	115	338	/	173	996
	出国深造率 Ratio of Further Studies Aboard	42.48%	19.07%	31.30%	28.40%	/	7.51%	24.30%
	读研率 Ratio of Further Study at Home	38.05%	44.75%	42.61%	24.26%	/	23.70%	33.13%
	对外交流人次 International Exchange	26	52	31	110	/	36	255

*不包括竺可桢学院学生
*Except the students belong to Chu Kochen Honors College

新增教学成果奖 Teaching Achievement Awards

奖项 The Awards	等级 Class	成果名称 Projects	负责人 Leaders
第七届高等教育国家级教学成果奖 The 7th National Higher Education Teaching Achievement Awards	二等奖 The 2nd Prize	课内外融合的程序设计能力培养方法的研究与实践 Research and Practice on Methodology for Training Programming Ability with Integration of Curricular and Extracurricular Activities	陈越等 Chen Yue, etc.
浙江省教学成果奖 Zhejiang Provincial Teaching Achievement Awards	一等奖 The 1st Prize	课内外融合的程序设计能力培养方法的研究与实践 Research and Practice on Methodology for Training Programming Ability with Integration of Curricular and Extracurricular Activities	陈越等 Chen Yue, etc.
		“三结合协同、四平台支撑”的光电专业综合实践能力培养探索与实践 Investigation and Practice on Comprehensive and Practical Ability of Optoelectronic Major based on "Three Cooperations and Four Platforms"	刘旭等 Liu Xu, etc.
		以机器人为教学载体的工程人才综合能力培养模式的研究与实践 Research and Practice on the Comprehensive Engineering Talent Training Mode Using Robot as Platform	熊蓉等 Xiong Rong, etc.
		强化过程、深化内核、深挖互动的教学方法研究与实践 Research and Practice on Teaching Methods of Emphasizing the Process and Interactivity	何钦铭等 He Qinming, etc.
		计算机类研究生卓越人才培养体系建设与实践 Construction and Practice on the Training System for Distinguished Graduate Students in Computer Sci. & Tech.	陈纯等 Chen Chun, etc.
	二等奖 The 2nd Prize	智能工厂综合自动化实验教学平台及创新实验模式的探索与实践 Exploration and Practice on Cyber-Refinery for Engineering Education	冯毅萍等 Feng Yiping, etc.
		以整合创新构建实践取向的设计教育模式 Practice-oriented Mode for Design Education Based on Integrated Innovation	应放天等 Ying Fangtian, etc.
		光学工程学科研究生创新人才的国际化培养机制探索 Exploration of Internationalized Training System for Innovative Graduate Students in Optical Engineering	何赛灵等 He Sailing, etc.

国际学科竞赛奖 International Disciplinary Competition

竞赛名称 Competition	奖 项 Award	获奖名单及作品 Winners List
2014年国际大学生程序设计竞赛 ACM International Collegiate Programming Contest Asia Region（ACM-ICPC）	亚洲赛区金牌（3块） Gold Medalist in Asia Regional Contest	Perditio：卢轶　林希　钱彦良 Everlasting：龚源　周雨晨　陈泽闽
	亚洲赛区银牌(5块) Silver Medalist in Asia Regional Contest	Wasleep：林炳辉　张逸瑶　倪馨仪 Everlasting：龚源　周雨晨　陈泽闽 Printemps：冯竞宜　陈亨泓　甘天圣 Bonjour：王夏君　梁露　李明哲
	亚洲赛区铜牌(4块) Bronze Medalist in Asia Regional Contest	Printemps：冯竞宜　陈亨泓　甘天圣 Niconiconi：林汉钊　朱稼乐　张瑞祥 Bonjour：王夏君　梁露　李明哲
2014年国际大学生程序设计竞赛北京邀请赛 2014 ACM-ICPC China Beijing Invitational Programming Contest	金奖 Gold Medalist	eternal reality：姜凯　陈伟杰　俞骁尧
2014年德国红点概念设计大赛 2014 International Design Competition ‘Red Dot Design Award’	红点设计大奖（9项） Red Dot Design Award	First Aid Blanket：马旭娜　李哲昕　金琦　俞怡君　程子芮　邵帅　李梓瑶 Bubble Toothbrush：俞怡君　金琦　程子芮　李哲昕　李梓瑶　马旭娜　邵帅 Meal's wall：王淑怡　张雨尘　王怡堃 Anypose：刘雪琛　胡雨琦　郭慧卓　於典　徐菲　童瑶 Baby Safety：闵歆　茅巍威　褚建琛 Lock for the blind：闵歆　茅巍威　褚建琛 Bamboo Light：褚建琛　陆南楠　肖娜　杜稼淳　刘帅　吴家成 Take me away：贺榆宵　张翰阳　王涌　徐阳婕　陈如佳　田元 Tic-lock：王淑怡　闵歆　张雨尘　杨伟南　叶风
2014年世界机器人足球赛伊朗公开赛 RoboCup Iran Open 2014	小型组亚军 Second place of Small Size League	赵越　李川　方立　童航君　唐文剑　叶杨笙　任赜宇
2014年第十八届机器人世界杯比赛 The 18th Robot World Cup (RoboCup 2014)	小型组冠军 Champion of Small Size League	李川　唐文剑　叶杨笙　宣羿　童航君　赵越　任赜宇　翊超
2014年台湾东元科技创意竞赛 2014 TECO Green Tech Contest	国际组冠军 Gold Medalist in International Contest	周宏翔　黄林彬　沈燚明　陈朝萌　郑志豪

国内学科竞赛奖 Civil Disciplinary Competition

竞赛名称 Competition	奖 项 Award	获奖名单及作品 Winners List
第四届全国大学生光电设计竞赛 The 4th National University Students' Opt-Sci-Tech Competition	二等奖（3） The 2nd Prize	天蓝队：李洋　吴函烁　胡宇 HALO队：吴晨雪　方大千　刘群 玛法达队：祝念　赵向东　徐越
	三等奖（3） The 3rd Prize	控光电：荆璐璐　张晓辰　卢宇鹏 维克队：汤颖超　吴凡　吴青峻 光？光！队：刘聪聪　马昊宇　陈玉莹
2014年第七届全国大学生信息安全竞赛 The 7th National Undergraduate Information Security Contest	一等奖 The 1st Prize	张先喆　吴冠初　赵起锋
2014年全国大学生电子设计竞赛信息安全技术专题邀请赛 2014 National Undergraduate Electronic Design Contest– Information Security Invitation Contest	二等奖 The 2nd Prize	张凯　曹舒翔　刘耕铭
	三等奖 The 3rd Prize	张晓辰　马超　石仕伟
2014年全国大学生电子设计竞赛TI杯模拟电子系统设计邀请赛 2014 National Undergraduate Electronic Design Contest TIIC – Analog System Design Invitation Contest	三等奖 The 3rd Prize	赵起锋　卢建荣　潘志鹏
2014年浙江省大学生程序设计竞赛 Zhejiang Province Programming Contest (ZJP)	金牌(3) Gold Medal	Vortex（喔太可思）：李璜　陈泽闽　罗杰巍 Flag（我的Flag可以插上月球）：钱彦良　卢轶　林希 Spectre（刷新幽鬼毁天灭地！）：龚源　王夏君　冯竞宜
	银牌(4) Silver Medal	Coder BADLY-NEEDED（冰天雪地跪求一只码农）：林靖豪　鲍嘉文　吴海麒 31OCT==25DEC：倪馨仪　许胤达　张启明 NULL（此队不存在）：张逸瑶　李明哲　肖子沐 Miracle Paint（奇迹的画笔）：孙儒骁　黄璜　林汉钊
	铜牌(1) Bronze Medal	AC automaton（AC自动机）：林涛　陆宇和　江毅
2014年浙江省大学生电子设计竞赛（TI杯） 2014 TIIC Regional Design Contest (the 5th Undergraduate Electronic Design Contest of Zhejiang Province)	TI杯 TIIC	徐　越　吴秋韵　严超华
	一等奖 The 1st Prize	赵起锋　卢建荣　潘志鹏　褚佳承　尹佳林　童　挺 陶志刚　卢锦胜　熊华清　马春晖　王　东　苗雪丹 朱乾稳　黄　醒　杨丽丽
	二等奖 The 2nd Prize	刘思贝　余昉恒　谭泳涛　王晓明　曾健飞　张文博 唐　立　陈笑行　秦仲亚　李思侃　厉　敏　魏世嘉 钱喆敏　孙宇乐　邵振雷　张　航　陆　旭　邓　敏 高思思　凌志强　张　琳　裘来彬　严劭天　严忱君
	三等奖 The 3rd Prize	王　柯　范　星　秦　通　邓鸿超　郑大大　徐锴禹 谢松晏　高　飞　黄鸯鸯　王益忠　周润远　金经榕

专项奖 Special Awards

获奖学生 Winners	奖 项 Award	院 系 Department/College
李 衍 Li Kan	2013-2014学年浙江大学竺可桢奖学金（研究生） Chu Kochen Scholarship	光电信息工程学系 Dept. of Optical Engineering
郑 斌 Zheng Bin	2013-2014学年浙江大学竺可桢奖学金（研究生） Chu Kochen Scholarship	信息与电子工程学系 Dept. of Information Science and Electronic Engineering
卢妍利 Lu Yanli	2013-2014学年浙江大学竺可桢奖学金（研究生） Chu Kochen Scholarship	生物医学工程与仪器科学学院 College of Biomedical Engineering & Instrument Science
鲁航文 Lu Hangwen	2013-2014学年浙江大学竺可桢奖学金（本科生） Chu Kochen Scholarship	光电信息工程学系 Dept. of Optical Engineering
李安祺 Li Anqi	2013-2014学年浙江大学竺可桢奖学金（本科生） Chu Kochen Scholarship	控制科学与工程学系 Dept. of Control Science and Engineering

院系设立的奖学金 Scholarships of Department/College

院 系 Department/College	奖学金 Scholarship	获奖人数 Awarded Number
光电信息工程学系 Dept. of Optical Engineering	敏通奖学金 Mintron Scholarship	5
	中为奖助学金 Zhongwei Scholarship and Grant	3
	舜宇奖学金 Sunny Scholarship	77
	宝成奖学金 Pou Chen Scholarship	12
	曹光彪奖学金 Chao Kuang Piu Scholarship	19
信息与电子工程学系 Dept. of Information Science and Electronic Engineering	ISEE荣誉奖 ISEE Honor Award	10
	ISEE新人奖 ISEE New Investigator Award	50
	ISEE单项贡献奖 ISEE Contribution Award	10

院系设立的奖学金（续） Scholarships of Department/College

院 系 Department/College	奖学金 Scholarship	获奖人数 Awarded Number
信息与电子工程学系 Dept. of Information Science and Electronic Engineering	ISEE助学金 ISEE Grant	10
	浙大信电—德州仪器大学生奖助学金 Dezhou Instrument Scholarship and Grant	18
	浙大信电—大华奖助学金 Dahua Scholarship and Grant	8
	浙大信电—高逸奖助学金 Gaoyi Scholarship and Grant	10
	浙大信电–武汉正维助学金 Wuhan Zhengwei Grant	22
控制科学与工程学系 Dept. of Control Science and Engineering	仁爱奖学金 Ren Ai Scholarship	16
	春晖奖学金 Chunhui Scholarship	3
	E+H奖学金 E+H Scholarship	10
	中控奖学金 Zhongkong Scholarship	26
	菲尼克斯奖学金 Phoenix Scholarship	12
	四方股份奖学金 Sifang Scholarship	10
计算机科学与技术学院 College of Computer Science and Technology	“视易之星”奖学金 “Shiyi Star” Scholarship	10
	“湘瑞教育”奖学金 “Xiangrui Education” Scholarship	10
	中加双学位班奖学金 China-Canada Double Degree Scholarship	6
	何志均教育基金奖学金 He Zhijun Education Foundation Scholarship	10
	Google优秀奖学金 Google Excellent Scholarship	4
	Google Anita Borg计算机女性奖学金 Google Anita Borg Computer Female Scholarship	6
	软件、数字媒体基地奖学金 Software, Digital Media Base Scholarship	50
生物医学工程与仪器科学学院 College of Biomedical Engineering & Instrument Science	浙大生仪–德州仪器大学生奖助学金 Texas College Scholarship	12
	中为奖助学金 Zhongwei Scholarship and Grant	14
	炬华科技大学生奖学金 Juhua Science Technology Scholarship	10

海外交流

INTERNATIONAL EXCHANGE

学部2014年教师出访参加学术会议、合作交流355人次，接待230人次国外学者来访进行学术交流，举办国际会议7次，接待英国巴斯大学工学院院长Hawley、UIUC工学院代表团、UCSB助理副校长郑光廷教授代表团等的来访。学部各院系与国外著名大学继续加强学生联合培养，推进教师科研合作，进一步提升了学部的科研和教学水平。

In the past year, about 355 persons visited abroad for academic exchange and cooperation. More than 230 world-renowned scholars were invited to visit FIT. Meanwhile, we successfully hosted about 7 international conferences and welcomed the delegations from University of bath, UIUC, and UCSB. The departments and colleges of FIT continue to strengthen the international exchange and cooperation in order to further enhance the level of teaching and scientific research.

序号 No.	会议名称 Conference	时间 Date
1	2014亚洲算法和计算年度会议 2014 Asian Association for Algorithms and Computation Annual Meeting	May 17-19
2	第20届 ISO/IEC JTC1/SC35 年会 The 20th ISO/IEC JTC1/SC35 Plenary	June 30-July 4
3	2014海峡两岸四地无线科技研讨会 2014 Cross Strait Quad-Regional Radio Wireless Technology	July 29-August 1
4	2014第6届智能人机系统与控制论国际会议 2014 Sixth International Conference on Intelligent Human-Machine Systems and Cybernetics	August 26 -27
5	2014年超大规模数据库国际会议 The 40th International Conference on Very Large Data Bases	September 1-5
6	菲尼克斯EduNet 2014亚洲年会 Asian Annual Edunet Conference 2014	October 29-30
7	第一届西湖国际光电子论坛 2014 West Lake Photonics Forum	October 30-November 1

2014要闻

NEWS 2014

1月13日，信息学部举行专门委员会全体会议

On Jan. 13th, the specialised committee meeting of FIT was held.

1月13-14日，信息学部举办优秀青年教师工作汇报交流会

On Jan. 13-14th , the excellent young teachers reported their research work and the invited experts gave them many helpful suggestions.

1月/6月//7月/9月，信息学部组织召开系列学科建设规划研讨论证会

In Jan. /Jun. /Sep. 2014, the discipline construction symposiums of information science & technology field were held.

3月/9月/11月，赛博（CYBER）协同创新中心召开系列工作会议

In Mar. /Sep. /Nov. 2014, Cyber Innovative Joint Research Center held the conferences to effectively promote the development of scientific research.

4月23日，信息学部顺利承办浙江大学西湖学术论坛第105次会议—“网络空间安全体系战略研究”

On April 14th, the 105th West Lake Academic Forum of ZJU on the theme of Research on Network Security System was held by FIT.

5月17日，信息学部第四届青年教师奖授予11位40岁以下的青年教师

On May 17th, the awarding ceremony for the 4th Young Teacher Award of FIT was held, 11 excellent young teachers under 40 years old won the prize.

5月17日，信息学部举办浙江大学学术年会系列之信息领域高端学术论坛

On May 17th, the high-level series forum of ZJU academic annual meeting was held。

6月13日，信息学部第三届学术委员会聘任仪式圆满召开

On June 13th, the 3rd Academic Committee members of FIT were appointed.

7月18日，信息学部研究生工作暑期研讨会成功举办

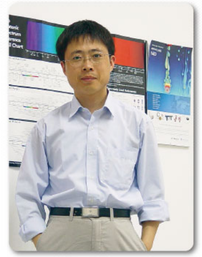
On July 18th, the graduate education symposium of FIT was held.

2014年，赛博（CYBER）协同创新中心共召开了5场系列学术交流会，邀请了P. R. Kumar、朱文武、余凯等国际知名学者分别从传感、认知计算、控制优化等主题领域展开深入研讨。

In 2014, Cyber Innovative Joint Research Center held a series of symposiums on different topics, such as sensing technology, cognitive computing, control optimization, etc. Many famous professors and scholars were invited to give us the excellent speeches.

控制系陈积明教授获第十届“浙江青年五四奖章”

Prof. Chen Jiming from Dept. of Control Science and Engineering was awarded the 10th Youth 5•4 Medal of Zhejiang Province.



计算机学院周昆教授当选为2015年IEEE FELLOW

Prof. Zhou Kun from College of Computer Science and Technology was elected as 2015 IEEE Fellow.

光电系童利民教授2014年当选美国光学学会会士

Prof. Tong Limin from Dept. of Optical Engineering was elected to be a Fellow of the Optical Society of American (OSA) in 2014.