

课题组调研

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<https://www.pnas.org> PNAS

<https://www.researchgate.net/profile/Yongan-Huang-2> 搜索课题组

论文的分类

- 传感与反馈一体视为comprehensive， 压阻传感和电阻传感一样
- 手机app， 安卓， ISO， IP/T
- 打印与印刷
- 激光： 激光刻蚀与激光烧蚀
- 电路设计与制作
- 关键字： 激光直写、线路焊接、（精密）柔性电路 通讯的
- 设计传感器与电路连接问题， 接口电路， 连接问题

Stretchable temperature-sensing circuits with strain suppression based on carbon nanotube transistors / Bao, Zhenan Murmann, Boris

Large-Scale Integrated Flexible Tactile Sensor Array for Sensitive Smart Robotic Touch Huaqiang Wu\* Jianshi Tang, \*Jian Yao

Highly stable flexible pressure sensors with a quasi-homogeneous composition and interlinked interface Zhengyou Zhang 3 & Chuan Fei Guo

All-printed soft human-machine interface for robotic physicochemical sensing Wei Gao

Encoding of tactile information in hand via skin-integrated wireless haptic interface Junsheng Yu\*<sup>1,2</sup>, Lidai Wang<sup>1,12</sup>, Wen Jung Li<sup>2,3</sup> and Xinge Yu<sup>1,3,12</sup>

organic pyroelectric sensors and organic thin-film transistor electronics Marco Fattori

An on-skin platform for wireless monitoring of flow rate, cumulative loss and temperature of sweat in real time John A. Rogers

Virtual Texture Generated Using Elastomeric Conductive Block Copolymer in a Wireless Multimodal Haptic Glove Darren J. Lipomi

Three-dimensional integrated stretchable electronics Sheng Xu

On-Skin Stimulation Devices for Haptic Feedback and Human–Machine Interfaces Hao Wu

A transparent bending-insensitive pressure sensor

Sungwon Lee<sup>1,2</sup>, Amir Reuveni<sup>1,2</sup>, Jonathan Reeder<sup>1</sup>, Sunghoon Lee<sup>1,2</sup>, Hanbit Jin<sup>1,2</sup>, Qihan Liu<sup>1</sup>, Tomoyuki Yokota<sup>1,3</sup>, Tsuyoshi Sekitani<sup>1,2,4</sup>, Takashi Itoyama<sup>4</sup>, Yusuke Abe<sup>1</sup>, Zhigang Suo<sup>1</sup> and Takao Someya<sup>1,2,4</sup>

Highly-integrated, miniaturized, stretchable electronic systems based on stacked multilayer network materials Yihui Zhang

Material-Based Approaches for the Fabrication of Stretchable Electronic Dae-Hyeong Kim

Augmented tactile-perception and hapticeedback rings as human-machine interfaces aiming for immersive interactions Chengkuo Lee

Highly pixelated, untethered tactile interfaces for an ultra-flexible on-skin telehaptic system Hye Jin Kim

Crosstalk-Free, High-Resolution Pressure Sensor Arrays Enabled by High-Throughput Laser Manufacturing

Yihao Li, Junyu Long, Yun Chen,\* Yan Huang,\* and Ni Zhao\*

A Capacitive and Piezoresistive Hybrid Sensor for Long-Distance Proximity and Wide-Range Force Detection in Human–Robot Collaboration Jie Zhao,\* PingAn Hu,\* and Jia Zhang\* Zhe Liu

Wireless graphene-based thermal patch for obtaining temperature distribution and performing thermography Youngcheol Chae<sup>1\*</sup>, Sunggu Yang<sup>2\*</sup>, Jong-Hyun Ahn

A Capacitive and Piezoresistive Hybrid Sensor for Long-Distance Proximity and Wide-Range Force Detection in Human–Robot Collaboration Jie Zhao,\* PingAn Hu,\* and Jia Zhang\*

Soft magnetic skin for super-resolution tactile sensing with force self-decoupling Yajing Shen<sup>1,6\*</sup>

Hybrid-Flexible Bimodal Sensing Wearable Glove System for Complex Hand Gesture Recognition Aaron Voon-Yew Thean Yida Li

Interactive Force Control Based on Multimodal Robot Skin for Physical Human Robot Collaboration Gordon Cheng

黄永刚

机械科学与工程

黄教授在微米尺度上研究固体的变形和断裂，通常从微米到纳米尺度。他目前正在研究碳纳米管的机械变形与电性能之间的耦合。碳纳米管具有优异的电性能。金属纳米管可以携带非常大的电流。作为纳米电子学中的互连。半导体纳米管可以作为场效应晶体管进行电开关。其场效应晶体管比当前器件小500倍以上。然而，最近的实验表明，碳纳米管的电导率在机械变形时变化了两个数量级，即金属纳米管在变形后变成半导体纳米管。碳纳米管的这种独特的机电特性对基于纳米管的电子学的可靠性具有重大意义，因为在制造和操作过程中产生的显著电性能变化变形可能导致器件故障。

黄教授正在开发一种纳米级连续介电理论，将原子模型直接纳入连续介电框架，以确定变形碳纳米管的原子位置。结合紧密结合计算，他的方法提供了一种有效的带隙计算方法，表明金属碳纳米管在机械变形时是否变成半导体。

John A. Rogers，主页网站：<http://rogersgroup.northwestern.edu/>，

Sheng Xu，主页网站：<https://xugroup.eng.ucsd.edu/>，<https://www.researchgate.net/scientific-contributions/Sheng-Xu-2144460872>

Xue Feng，<https://www.tsinghua.edu.cn/info/1175/87536.htm>，<https://www.researchgate.net/profile/Xue-Feng-14>

Zhenan Bao，<https://baogroup.stanford.edu/people/zhenan-bao>，

Chengkuo Lee，<https://www.ece.nus.edu.sg/stfpage/elec/home.html>，<https://www.ece.nus.edu.sg/stfpage/elec/publications.html>

摩擦纳米发电机，人机交互，通过简单的运动控制屏幕里面的人物移动

Xiao Dongchen，<https://personal.ntu.edu.sg/chenxd/publication.html>，

Ravinder Dahiya，拉文德·迪希亚 <https://rsdahiya.com/publications/journals/>，丝网印刷，有机晶体管，也有很多电路方面的研究

- <https://ieeexplore.ieee.org/document/9781508> Torsional and bending endurance analysis of screen-printed interconnects on various flexible substrates
- <https://ieeexplore.ieee.org/document/9751110> 丝网印刷RFID标签和硬质微芯片在纸上的混合集成，介绍了芯片引脚如何做到基底表面的键合
- <https://onlinelibrary.wiley.com/doi/10.1002/aisy.202100091> 用于触觉互动、沟通和康复的智能触觉手套 触觉感知机制与感知阈值的研究，智能手套的关键要求



SHEN Yajin，沈亚京，<https://ece.hkust.edu.hk/eevajing> <https://www.researchgate.net/profile/Yajing-Shen-2> 香港城市大学，生物医学工程

Ting Zhang,苏州仿生研究院，<http://ting.sinano.ac.cn/> Dae-Hyeong Kim，<https://www.researchgate.net/scientific-contributions/Dae-Hyeong-Kim-2134654335>

Jaeha-Kim <https://www.researchgate.net/profile/Jaeha-Kim-6>

Scott T. Keene， Sheng Xu <https://xugroup.eng.ucsd.edu/publications/>，

Yihui Zhang，张一慧，<http://yihui Zhang.org/publications.html>，主要是一些结构的设计，能够实现从一个二维到三维的立体转换，平面的一只青蛙，经过折纸结构后会变成立体青蛙

复旦大学彭慧胜，功能性纤维材料，<https://www.researchgate.net/profile/Huisheng-Peng>

清华大学任天令，日常生理信号的透气性电子皮肤，<https://www.researchgate.net/profile/Tianling-Ren>

南方科大郭传飞，电子皮肤新概念 <https://orcid.org/0000-0003-4513-3117>

苏州孙旭辉，软物质研究所，[http://funson.suda.edu.cn/funsomen/2017\\_4779/list.htm](http://funson.suda.edu.cn/funsomen/2017_4779/list.htm) 孙富春，<https://www.researchgate.net/profile/Fuchun-Sun-2> 机器人视觉，用视觉的方法解决触觉的感知。触觉智能，<https://hi.is.mpg.de/publications> 分布式机器人实验室，[http://groups.csail.mit.edu/drl/wiki/index.php?title=Main\\_Page](http://groups.csail.mit.edu/drl/wiki/index.php?title=Main_Page)

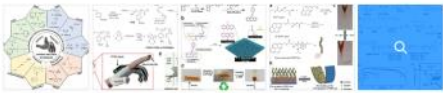
张珽，触觉传感器新策略，人机交互超级马里奥

黄贤主页 <https://orcid.org/0000-0002-8788-9185>，做电子皮，液态金属，纳米颗粒，偏生物类的 <https://pubs.acs.org/doi/10.1021/acsami.2c08743> 热转印

金正贤,Jeonghyun KIM – Professor (Associate) – Kwangwoon University, Seoul – Electronics Convergence Engineering (researchgate.net), 擅长无线通信小型化设计

黄永安 <https://www.researchgate.net/profile/Yongan-Huang-2> 柔性/可拉伸电子制造、电动流体打印、软材料和纳米技术以及应用力学，三维保形

Darren Lipomi达伦·利波米 <https://www.researchgate.net/profile/Darren-Lipomi>



Polymer Chemistry for Haptics, Soft Robotics, and Human–Machine Interfaces 觉反馈手套，结合了振动触觉马达、热电装置和电触觉电极，用于再现硬度、温度和粗糙

Hao Wu ,聚合物的导电性，电极材料，与黄永安、郭伟 <https://link.springer.com/article/10.1007/s11431-022-2074-8> <https://onlinelibrary.wiley.com/doi/10.1002/admt.202000993> 任意曲面上曲面电子器件的制造技术 保形技术

Nuria López-Ruiz，喜欢测气体，光学，丝网印刷 <https://www.researchgate.net/profile/Nuria-Lopez-Ruiz> <https://pubs.acs.org/doi/10.1021/ac4028802> 丝网印刷的柔性射频识别标签，用于氧气监测

[http://groups.csail.mit.edu/drl/wiki/index.php?title=Main\\_Page](http://groups.csail.mit.edu/drl/wiki/index.php?title=Main_Page) 分布式机器人实验室，包括尺蠖移动机器人，桌面纸张处理机器人和一组合作操作家具的机器

米拉德·莫萨莱 Milad Mosallaei 丝网印刷表征，刚度印刷 <https://www.researchgate.net/profile/Milad-Mosallaei>

宋彦林 <https://www.researchgate.net/profile/Yanlin-Song> <https://onlinelibrary.wiley.com/doi/10.1002/aisy.202100253> 活性有源矩阵

的电导率在机械变形时变化了两个数量级，即金属纳米管在变形后变成半导体纳米管。碳纳米管的这种独特的机电特性对基于纳米管的电子学的可靠性具有重大意义，因为在制造和操作过程中产生的显著电性能变化变形可能导致器件故障。

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<https://www.researchgate.net/scientific-contributions/Yonggang-Huang-39432844> 黄永刚

<https://onlinelibrary.wiley.com/doi/10.1002/adma.201902254> 可拉伸无机电子学中的机械引导结构设计

<https://link.springer.com/article/10.1007/s41315-018-0060-z> 软人机界面：设计、传感和刺激，介绍了人机交互的定义

## 柔性电路视频

[https://wx.vzan.com/live/page/6B271CB89E575925296F8C397E567C36?topicid=687882840&jumpid=1&fr=&sharetstamp=1667706965852&shauid=1jNtGm\\_vK\\_SRKO7pig9SAA\\*\\*](https://wx.vzan.com/live/page/6B271CB89E575925296F8C397E567C36?topicid=687882840&jumpid=1&fr=&sharetstamp=1667706965852&shauid=1jNtGm_vK_SRKO7pig9SAA**)  
[https://wx.vzan.com/live/page/6B271CB89E575925296F8C397E567C36?topicid=687882840&shauid=1jNtGm\\_vK\\_SRKO7pig9SAA\\*\\*&vprid=0&sharetstamp=1667706725165](https://wx.vzan.com/live/page/6B271CB89E575925296F8C397E567C36?topicid=687882840&shauid=1jNtGm_vK_SRKO7pig9SAA**&vprid=0&sharetstamp=1667706725165) Rogers

[https://wx.vzan.com/live/page/D45D2E2ECA33EC3475DEBDA86F924E98?topicid=149639156&shauid=1jNtGm\\_vK\\_SRKO7pig9SAA\\*\\*&vprid=0&sharetstamp=1667706746298](https://wx.vzan.com/live/page/D45D2E2ECA33EC3475DEBDA86F924E98?topicid=149639156&shauid=1jNtGm_vK_SRKO7pig9SAA**&vprid=0&sharetstamp=1667706746298) 高伟

<https://www.koushare.com/video/videodetail/31125> Dae-Heyong Kim

<https://www.koushare.com/video/videodetail/2999> A new chapter of semiconductors with magnetic impuritie

<https://www.youtube.com/watch?v=wrlO65aLdSE>

[Xuanhe Zhao: Soft Materials Innovation for Global Health](#)



<https://www.koushare.com/video/videodetail/24672> 鲁南淑 中文

<https://www.koushare.com/video/videodetail/31483> 柔性打印技术

<https://www.koushare.com/video/videodetail/31132> Gaowei 汗液分析

<https://www.koushare.com/video/videodetail/31486> 咖啡环

<https://www.koushare.com/video/videodetail/26545>  
[https://wx.vzan.com/live/page/2444CB4308C31EC3FBE1055EE71CF52F?topicid=1998201900&shauid=1jNtGm\\_vK\\_SRKO7pig9SAA\\*\\*&vprid=0&sharetstamp=1667706755485](https://wx.vzan.com/live/page/2444CB4308C31EC3FBE1055EE71CF52F?topicid=1998201900&shauid=1jNtGm_vK_SRKO7pig9SAA**&vprid=0&sharetstamp=1667706755485)  
[https://wx.vzan.com/live/page/2444CB4308C31EC3FBE1055EE71CF52F?topicid=1998201900&shauid=1jNtGm\\_vK\\_SRKO7pig9SAA\\*\\*&vprid=0&sharetstamp=1667706755485&ver=38a2fec688eb4c28927e8026e71a4d46](https://wx.vzan.com/live/page/2444CB4308C31EC3FBE1055EE71CF52F?topicid=1998201900&shauid=1jNtGm_vK_SRKO7pig9SAA**&vprid=0&sharetstamp=1667706755485&ver=38a2fec688eb4c28927e8026e71a4d46) 徐胜

个人博客扩展: <https://www.researchgate.net/profile/Mosallaei>

宋彦林 <https://www.researchgate.net/profile/Yanlin-Song>  
<https://onlinelibrary.wiley.com/doi/10.1002/aisy.202100253> 活性有源矩阵  
<https://pubs.rsc.org/en/content/articlelanding/2017/TC/C7TC00038C> 喷墨打印可穿戴电子设备，打印参数设置

郭伟，华中科技大学，与wuhao经常发文章，擅长从材料的角度运用于机器人的不稳定性抓取检测。  
<https://www.researchgate.net/scientific-contributions/Wei-Guo-2213324921>

戴厚德，很多磁场的研究文章，机器人定位 <https://www.researchgate.net/profile/Houde-Dai>  
<https://ieeexplore.ieee.org/document/9839604> 一种同时测量垂直力和剪切力的力解耦方法

凯瑟琳·库亨贝克尔 <https://hi.is.mpg.de/person/kjk> 机械专业她的研究兴趣包括触觉界面和机器人系统的设计和控制在德国斯图加特马克斯普朗克智能系统研究所触觉智能部门的负责人 智能感知的应用，虚拟场景下不切实际的用户体验

喷墨  
<https://www.researchgate.net/profile/Yu-Feng-Liu> 刘玉峰  
<https://link.springer.com/article/10.1007/s00339-013-7569-7> 通过压电喷墨印刷中各种粘度油墨的操作波形控制液滴形成  
<https://www.researchgate.net/search/publication?q=Effects+of+the+actuation+waveform+on+the+drop+size+reduction+in+drop-on-demand+inkjet+printing> 大量喷墨相关的文章  
高硕 <https://ieeexplore.ieee.org/author/37085823357?history=no&highlight=true&returnType=SEARCH&pageNumber=1&searchWithin=%22Author%20ids%22:37085823357&returnFacets=ALL> 电容、压电传感接口

Nanshu Lu, Strategies for body-conformable electronics

Wei Gao, 生物学相关，汗液检测

Huanbo Sun, 马普，  
Guiding the design of superresolution tactile skins with taxel value isolines theory  
A soft thumb-sized vision-based sensor with accurate all-round force perception

<https://ieeexplore.ieee.org/document/9371752/authors#authors> 柔性薄膜晶体管、电路

[https://wx.vzan.com/live/page/2717A5D20CA6F10D4F88A11AE6DE37C?topicid=1301599991&shauid=1jNtGm\\_vK\\_SRKO7pJg9SAA\\*\\*&vpriid=0&sharetstamp=1667706751364](https://wx.vzan.com/live/page/2717A5D20CA6F10D4F88A11AE6DE37C?topicid=1301599991&shauid=1jNtGm_vK_SRKO7pJg9SAA**&vpriid=0&sharetstamp=1667706751364) 马普-Metin sitti

<https://www.koushare.com/video/videodetail/31496> Soft, 3D Microsystems for Biomedicine (3D Mesostructures for Pressure Sensing) Mengdi Han