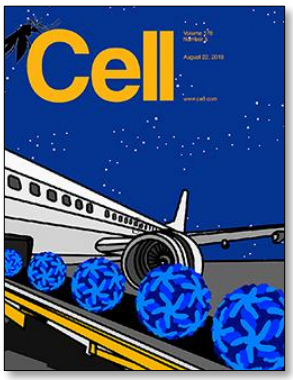
Special collection

To celebrate the centennial of Nankai University, this curated collection of 123 articles highlights the institution's scholarly achievements and features innovative scientific research across eleven subject areas.

- Cell Press
- The Lancet / EBioMedicine
- Chemistry 化学
- Computer Science 计算机
- Economics & Social Sciences 经济+社科
- Energy & Earth 能源与地球
- Engineering 工程
- Environmental, Aquatic and Agriculture 环境、水资源、农业
- Life Science, Biochemistry & Applied Biosciences 生命科学+生物化学+应用生物学
- Materials Science 材料
- Mathematical Sciences 数学
- Neuroscience and Psychology, Health & Medical Sciences 神经科学和心理学+健康医学
- Physics 物理

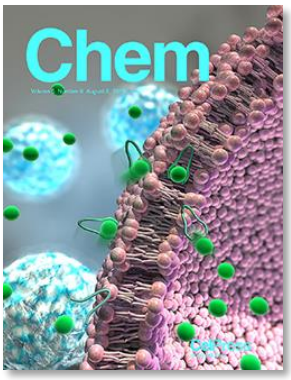


Cell

Self-Recognition of an Inducible Host lncRNA by RIG-I Feedback Restricts Innate Immune Response
Jiang, M., Zhang, S., Yang, Z., Lin, H., Zhu, J., Liu, L., Wang, W., Liu, S., Liu, W., Ma, Y., Zhang, L., Cao, X.

Deterministic progenitor behavior and unitary production of neurons in the neocortex
Gao, P., Postiglione, M.P., Krieger, T.G., Hernandez, L., Wang, C., Han, Z., Streicher, C., Papusheva, E., Insolera, R., Chugh, K., Kodish, O., Huang, K., Simons, B.D., Luo, L., Hippenmeyer, S., Shi, S.-H.

Tumor-Induced Generation of Splenic Erythroblast-like Ter-Cells Promotes Tumor Progression
Han, Y., Liu, Q., Hou, J., Gu, Y., Zhang, Y., Chen, Z., Fan, J., Zhou, W., Qiu, S., Zhang, Y., Dong, T., Li, N., Jiang, Z., Zhu, H., Zhang, Q., Ma, Y., Zhang, L., Wang, Q., Yu, Y., Li, N., Cao, X.

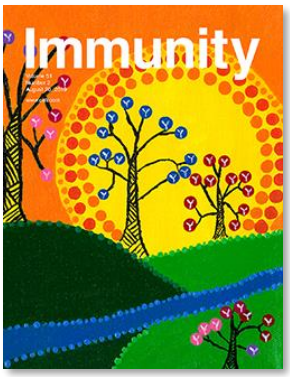


Chem

Metal-Organic Framework Anchored with a Lewis Pair as a New Paradigm for Catalysis
Niu, Z., Bhagya Gunatilleke, W.D.C., Sun, Q., Lan, P.C., Perman, J., Ma, J.-G., Cheng, Y., Aguila, B., Ma, S.

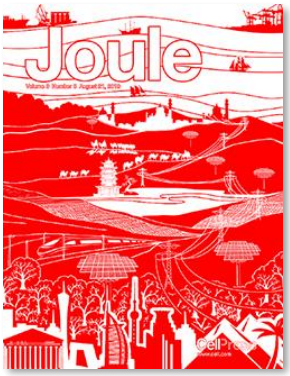
Rechargeable Aqueous Polymer-Air Batteries Based on Polyanthraquinone Anode
Yixin Li, Luojia Liu, Chang Liu, Yong Lu, Ruijuan Shi, Fujun Li, Jun Chen.

Combining Quinone Cathode and Ionic Liquid Electrolyte for Organic Sodium-Ion Batteries
Xingchao Wang, Zhenfeng Shang, Aikai Yang, Qiu Zhang, Fangyi Cheng, Dianzeng Jia, Jun Chen



Immunity

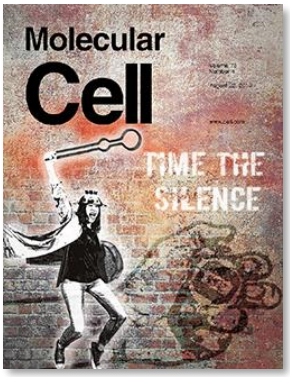
The Endotoxin Delivery Protein HMGB1 Mediates Caspase-11-Dependent Lethality in Sepsis
Deng, M., Tang, Y., Li, W., Wang, X., Zhang, R., Zhang, X., Zhao, X., Liu, J., Tang, C., Liu, Z., Huang, Y., Peng, H., Xiao, L., Tang, D., Scott, M.J., Wang, Q., Liu, J., Xiao, X., Watkins, S., Li, J., Yang, H., Wang, H., Chen, F., Tracey, K.J., Billiar, T.R., Lu, B.



Joule

Greening Ammonia toward the Solar Ammonia Refinery
Wang, L., Xia, M., Wang, H., Huang, K., Qian, C., Maravelias, C.T., Ozin, G.A.

Reduced-Dimensional α-CsPbX3 Perovskites for Efficient and Stable Photovoltaics
Jiang, Y., Yuan, J., Ni, Y., Yang, J., Wang, Y., Jiu, T., Yuan, M., Chen, J.



Molecular Cell

A regulatory signaling loop comprising the PGAM5 phosphatase and CK2 controls receptor-mediated mitophagy
Chen, G., Han, Z., Feng, D., Chen, Y., Chen, L., Wu, H., Huang, L., Zhou, C., Cai, X., Fu, C., Duan, L., Wang, X., Liu, L., Liu, X., Shen, Y., Zhu, Y., Chen, Q.

The Vici Syndrome Protein EPG5 Is a Rab7 Effector that Determines the Fusion Specificity of Autophagosomes with Late Endosomes/Lysosomes
Wang, Z., Miao, G., Xue, X., Guo, X., Yuan, C., Wang, Z., Zhang, G., Chen, Y., Feng, D., Hu, J., Zhang, H.

Trends in Biochemical Sciences

Emerging roles of the p38 MAPK and PI3K/AKT/mTOR pathways in oncogene-induced senescence
Xu, Y., Li, N., Xiang, R., Sun, P.

The Lancet / EbioMedicine

EBioMedicine

Salidroside improves the hypoxic tumor microenvironment and reverses the drug resistance of platinum drugs via HIF-1α signaling pathway
Qin, Y., Liu, H.-J., Li, M., Zhai, D.-H., Tang, Y.-H., Yang, L., Qiao, K.-L., Yang, J.-H., Zhong, W.-L., Zhang, Q., Liu, Y.-R., Yang, G., Sun, T., Yang, C.

Human rhomboid family-1 modulates clathrin coated vesicle-dependent pro-transforming growth factor α membrane trafficking to promote breast cancer progression
Li, J., Bai, T.-R., Gao, S., Zhou, Z., Peng, X.-M., Zhang, L.-S., Dou, D.-L., Zhang, Z.-S., Li, L.-Y.

Salvianolic acid A targeting the transgelin-actin complex to enhance vasoconstriction
Zhong, W., Sun, B., Gao, W., Qin, Y., Zhang, H., Huai, L., Tang, Y., Liang, Y., He, L., Zhang, X., Tao, H., Chen, S., Yang, W., Yang, L., Liu, Y., Liu, H., Zhou, H., Sun, T., Yang, C.

Chemistry 化学

南开大学1919**年**创建伊始即设化学门，1921**年**创建化学系，是我国大学最早建立的化学系之一。1995**年正式成立化学学院。目前，南开化学学科已成**为我国化学教学和科研的重要基地，在基础研究和应用基础研究等方面均取得了突出成绩，为学科发展和国民经济建设做出了自己的贡献。目前,**南开化学学科有无机化学、分析化学、有机化学、物理化学、高分子化学与物理、**应用化学、农药学等多个学科点。主要研究方向包括：功能配位化学、生物无机化学、纳米无机化学、无机 - 有机杂合材料、金属有机化学、物理有机化学、有机合成化学、超分子化学、化学反应动力学、计算化学和分子模拟等。化学入选国家重点建设一流学科。

The department of chemistry at Nankai University is an important platform for China's chemistry education and scientific research and has been selected to build Chinese first-class chemistry studies at a global level. The department has not only made outstanding achievements in basic research and applied research, but also contributed to the development of China's national economy and the development of modern chemistry. Nankai University started researching and teaching chemistry at the very beginning of its establishment in 1919

and established the department of chemistry in 1921, which made itself one of the oldest chemistry departments in China. In 1995, the College of Chemistry of Nankai University was formally founded. The college now teaches subjects, including inorganic chemistry, analytical chemistry, organic chemistry, physical chemistry, polymer chemistry and physics, applied chemistry, and pesticide science, and key research directions involve functional coordination chemistry, bio-inorganic chemistry, nano-inorganic chemistry, inorganic-organic hybrid materials, metal organic chemistry, physical organic chemistry, organic synthetic chemistry, supramolecular chemistry, chemical reaction kinetics, computational chemistry and molecules simulation, etc.

Biosensors and Bioelectronics

Carbon dots based photoelectrochemical sensors for ultrasensitive detection of glutathione and its applications in probing of myocardial infarction
Li, Z., Zhang, J., Li, Y., Zhao, S., Zhang, P., Zhang, Y., Bi, J., Liu, G., Yue, Z.

Chinese Chemical Letters

A polysaccharide/tetraphenylethylene-mediated blue-light emissive and injectable supramolecular hydrogel
Zhao, Q., Chen, Y., Liu, Y.

Coordination Chemistry Reviews

Toward heterometallic single-molecule magnets: Synthetic strategy, structures and properties of 3d-4f discrete complexes
Liu, K., Shi, W., Cheng, P.

Electrochimica Acta

Hierarchical porous carbon nanofibers as binder-free electrode for high-performance supercapacitor
Zhang, L., Jiang, Y., Wang, L., Zhang, C., Liu, S.

A highly energy-efficient flow-through electro-Fenton process for organic pollutants degradation
Ma, L., Zhou, M., Ren, G., Yang, W., Liang, L.

Journal of Chromatography A

Advances in covalent organic frameworks in separation science
Qian, H.-L., Yang, C.-X.(Yang, Chengxiong), Wang, W.-L., Yang, C., Yan, X.-P.

Fabrication of metal-organic framework MIL-88B films on stainless steel fibers for solid-phase microextraction of polychlorinated biphenyls
Wu, Y.-Y., Yang, C.-X., Yan, X.-P.

Journal of Solid State Chemistry

A highly selective and fast-response fluorescent probe based on Cd-MOF for the visual detection of Al^{3+} ion and quantitative detection of Fe^{3+} ion
Lv, R., Chen, Z., Fu, X., Yang, B., Li, H., Su, J., Gu, W., Liu, X.

Sensors and Actuators, B: Chemical

Two-photon fluorescent probe for lysosome-targetable hypochlorous acid detection within living cells
Zhang, P., Wang, H., Zhang, D., Zeng, X., Zeng, R., Xiao, L., Tao, H., Long, Y., Yi, P., Chen, J.

Rolled-up SnO_2 nanomembranes: A new platform for efficient gas sensors
Liu, X.(Liu, Xianghong), Ma, T., Xu, Y., Sun, L., Zheng, L., Schmidt, O.G., Zhang, J.

Computer Science 计算机

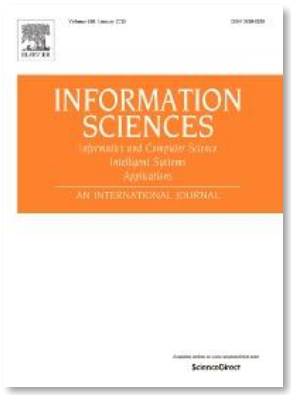
南开大学于1958年开始进行计算机研究工作，是我国最早从事计算机研究与教学的院校之一。经过半个世纪的建设和发展，目前已形成了完整的学科体系和特色鲜明的发展模式。近年来在与学科发展紧密相关的多个领域取得了长足进步，形成了符合国民经济和社会发展需求的稳定学科方向。目前主要设立了并行计算与分布式存储、大数据处理与知识工程、网络与信息安全、多媒体图形图像生成与处理、移动云计算与智能感知五个学科方向。其中，在媒体计算、数据处理、分布式计算、网络安全、人工智能等方面的研究已处于国际先进水平并取得大量成果，成为南开大学计算机学科的研究特色。

Nankai University began its research on computer science in 1958 as one of the earliest institutions engaged in computer research and education in China. After half a century of construction and development, a complete disciplinary system and a distinctive development model have been formed. At present, Nankai's computer science research focusses on five directions: 1. parallel computing and distributed storage; 2. big data processing and knowledge engineering; 3. network and information security; 4. multimedia graphic image generation and processing; 5. mobile cloud computing and intelligent sensing. Among them, Nankai's features research in media computing, data processing, distributed computing, network security, and artificial intelligence have been at the international advanced level and created a lot of outputs.

Future Generation Computer Systems

Multi-key privacy-preserving deep learning in cloud computing
Li, P., Li, J., Huang, Z., Li, T., Gao, C.-Z., Yiu, S.-M., Chen, K.

Verifiable searchable encryption with aggregate keys for data sharing system
Liu, Z., Li, T., Li, P., Jia, C., Li, J.



Information Sciences

Differentially private Naive Bayes learning over multiple data sources
Li, T., Li, J., Liu, Z., Li, P., Jia, C.

Secure data uploading scheme for a smart home system
Shen, J., Wang, C., Li, T., Chen, X., Huang, X., Zhan, Z.-H.

DivORAM: Towards a practical oblivious RAM with variable block size
Liu, Z., Huang, Y., Li, J., Cheng, X., Shen, C.

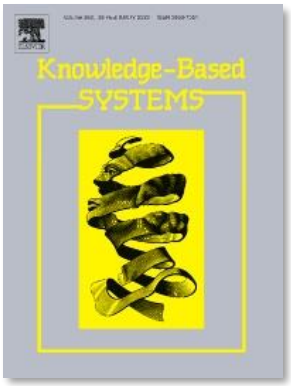
Imbalanced enterprise credit evaluation with DTE-SBD: Decision tree ensemble based on SMOTE and bagging with differentiated sampling rates
Sun, J., Lang, J., Fujita, H., Li, H.

Extremality of degree-based graph entropies
Cao, S., Dehmer, M., Shi, Y.

Fifty years of graph matching, network alignment and network comparison
Emmert-Streib, F., Dehmer, M., Shi, Y.

Journal of Network and Computer Applications

Multi-authority fine-grained access control with accountability and its application in cloud
Li, J., Chen, X., Chow, S.S.M., Huang, Q., Wong, D.S., Liu, Z.



Knowledge-Based Systems

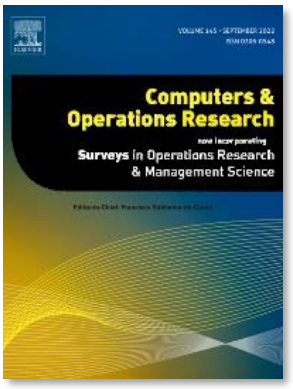
L-EncDB: A lightweight framework for privacy-preserving data queries in cloud computing
Li, J., Liu, Z., Chen, X., Xhafa, F., Tan, X., Wong, D.S.

Economics & Social Sciences 经济+社科

南开大学历史上就以文理见长，在人文社会科学领域具有悠久历史和深厚积淀，历史学、经济学、管理学等既是传统优势学科，也是学校率先冲击世界一流的重要学科。学校现有全国高校文科重点研究基地**7个**，**教育部国**别与区域研究基地**7个**。**近五年立**项国家社科基金重大项目近50项，位居全国高校第五。同时，积极服务国家战略，承担直接服务经济社会发展的项目**1400余个**，**提供高**质量决策咨询报告**500多份**。**南开大学**经济学科是中国综合性大学中最早建立的学科之一，创立于**1923年**。经过长期的建设和发展，目前学科门类齐全，并已发展成为国内领先、国际知名的经济学人才培养基地、经济科学研究创新基地、国际学术交流基地、中国经济改革与发展的重要思想库。

Nankai University is well-known for its education and researches in both liberal arts and science. With its 100 years of history, Nankai has accumulated unique advantage in the subject areas including history, economics, and management, which are also Nankai's major concentrations for the construction of world first-class disciplines. Nankai now has seven China's national key research institutes for liberal and seven national and regional research bases of the Ministry of Education. In the past five years, Nankai obtained nearly 50 national major social science fund projects (this number ranks fifth among all universities in China). Nankai also proactively serves China's national strategy by undertaking more than 1,400 projects to directly serve the economic and social development of China and having provided more than 500 high-quality decision-making consultation reports.

Founded in 1923, Nankai's Department of Economics is one of the oldest departments of economics established in China's comprehensive universities. After nearly 80 years of construction and development, Nankai's Department of Economics has become a domestically leading and internationally well-known platform for the education of talents for economics and the innovative researches of economics. Nankai's department of economics also serves as an important think tank for China's economic reform and development.



Computers and Operations Research

Pricing and collecting decisions in a closed-loop supply chain with symmetric and asymmetric information
Wei, J., Govindan, K., Li, Y., Zhao, J.

On the loss-averse dual-sourcing problem under supply disruption
Li, X., Li, Y.

Economic Modelling

Baidu news information flow and return volatility: Evidence for the Sequential Information Arrival Hypothesis
Shen, D., Li, X., Zhang, W.

European Journal of Operational Research

Strategic planning: Design and coordination for dual-recycling channel reverse supply chain considering consumer behavior
Feng, L., Govindan, K., Li, C.

Optimal acquisition and production policy in a hybrid manufacturing/ remanufacturing system with core acquisition at different quality levels
Cai, X., Lai, M., Li, X., Li, Y., Wu, X.

Journal of Academic Librarianship

Applications of Mobile Social Media: WeChat Among Academic Libraries in China
Xu, J., Kang, Q., Song, Z., Clarke, C.P.

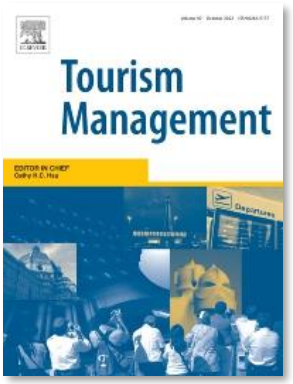
Journal of Business Research

Dynamic capabilities, environmental dynamism, and competitive advantage: Evidence from China
Li, D.-Y., Liu, J.

Do corporate image and reputation drive brand equity in India and China? - Similarities and differences
Heinberg, M., Ozkaya, H.E., Taube, M.

Pacific Basin Finance Journal

Do Chinese internet stock message boards convey firm-specific information?
Li, X., Shen, D., Zhang, W.



Tourism Management

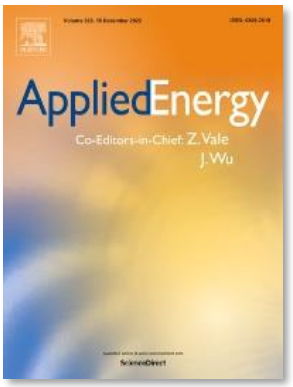
Resident-tourist value co-creation: The role of residents' perceived tourism impacts and life satisfaction
Lin, Z., Chen, Y., Filieri, R.

Energy & Earth 能源与地球

针对上世纪七十年代爆发的世界能源危机，南开大学在国内较早开展新能源材料等学科前沿研究。于上世纪八十年代初研制出我国第一支镍氢电池样品，发明了**“直接法合成**ZSM-5**分子筛”。**1992**年，成立我国高校第一个新能源材料化学研究所。**1997**年，成立新催化材料科学研究所。**2007**年，成立能源材料化学天津市重点**实验室。主要研究方向为分子基能源材料、低碳能源催化材料、高效化学电源。近年，以国家能源重大需求为牵引，以创造新物质和追求原子经济性的化学科学发展为推动，着重于能源-**材料**-化学**-环境-经济等多学科的交叉重大问题，开展化学和（或）电化学反应获得能量的高效、清洁、低成本与长寿命转化与储存的创新科学研究与开发，为实现能源低碳、能源清洁利用、新能源与储能、高能化学电源、节能减排做贡献。

In response to 1970s' world energy crisis, Nankai University carried out China's earliest researches on new energy materials and relevant frontiers research topics. In the early 1980s, Nankai's researchers invented China's first nickel-hydrogen battery sample by using "direct synthesis of ZSM-5 molecular sieve". In 1992, Nankai established China's first research

institute of new energy materials and chemistry. In 1997, Nankai's Institute of New Catalytic Materials was established. And in 2007, Nankai established Tianjin Key Laboratory of Chemical Energy Materials to research molecular-based energy materials, low-carbon energy catalytic materials, and high-efficiency chemical power sources. Driven by the recent increasing demands for new energy in China, these research institutes aim to address the cross-cutting issues surrounding energy, material, chemistry, environment and economics for the development of new materials and the pursuit of atomic economy and to carry out innovative scientific researches on electrochemical reaction and obtain energetic, efficient, clean, low-cost and long-life conversion.



Applied Energy

Life cycle assessment of grid-connected photovoltaic power generation from crystalline silicon solar modules in China
Hou, G., Sun, H., Jiang, Z., Pan, Z., Wang, Y., Zhang, X., Zhao, Y., Yao, Q.

Atmospheric Research

Chemical composition and source apportionment of ambient PM2.5 during the non-heating period in Taian, China
Liu, B., Song, N., Dai, Q., Mei, R., Sui, B., Bi, X., Feng, Y.

Bioresource Technology

Preparation and characterization of a novel graphene/biochar composite for aqueous phenanthrene and mercury removal
Tang, J., Lv, H., Gong, Y., Huang, Y.

Energy

Combustion process and NOx emissions of a marine auxiliary diesel engine fuelled with waste cooking oil biodiesel blends
Wei, L., Cheng, R., Mao, H., Geng, P., Zhang, Y., You, K.

Journal of Energy Chemistry

MXene-based materials for electrochemical energy storage
Zhang, X., Zhang, Z., Zhou, Z.

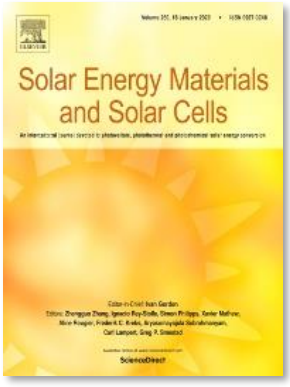
Journal of Power Sources

Fe_3O_4 nanoparticles grown on graphene as advanced electrode materials for supercapacitors
Wang, Q., Jiao, L., Du, H., Wang, Y., Yuan, H.

Highly stable and ultrafast electrode reaction of graphite for sodium ion batteries
Zhu, Z., Cheng, F., Hu, Z., Niu, Z., Chen, J.

Enhanced hydrogen storage properties of MgH 2 catalyzed with carbon-supported nanocrystalline TiO 2
Zhang, X., Leng, Z., Gao, M., Hu, J., Du, F., Yao, J., Pan, H., Liu, Y.(Liu Yongfeng)

Bismuth sulfide: A high-capacity anode for sodium-ion batteries
Sun, W., Rui, X., Zhang, D., Jiang, Y., Sun, Z., Liu, H., Dou, S.



Solar Energy Materials and Solar Cells

10% Efficiency Cu2ZnSn(S,Se)4 thin film solar cells fabricated by magnetron sputtering with enlarged depletion region width
Li, J., Wang, H., Luo, M., Tang, J., Chen, C., Liu, W., Liu, F., Sun, Y., Han, J., Zhang, Y.

Engineering 工程

工科是南开大学的一支重要力量。光学工程方面，主要有微纳光子学与光场调控技术、超快光子学与光谱成像技术等方向。材料科学与工程方面，主要有新催化材料与能源环境催化、新能源材料与化学电源、光电转换材料与太阳能电池、新型碳材料与超级电容器、无机功能材料与物质存储等。电子科学与技术方面，主要有薄膜光伏材料与器件的设计与实现研究、高温超导通信器件的应用、传感器技术与智能系统等方向。信息与通信工程方面，围绕物联网、计算机网络通信、超导通信、无线传感器网络等热点领域研发新技术、新方法。控制科学与工程方面，主要包括先进机器人技术、微纳系统的控制与仿真、现代物流系统工程与优化管理技术研究、生物信息学与生物控制等。计算机科学与技术方面，主要包括大数据处理与知识工程、网络与信息安全、移动云计算与智能感知。环境科学与工程方面，主要包括环境科学、环境工程、环境管理与经济等。软件工程方面，主要包括软件工程与软件方法学、并行软件及算法设计、数据工程、嵌入式软件与信息安全。

Engineering is an essential subject area at Nankai University. In optical engineering, Nankai focuses on micro-nanophotonics and light field control technology, and ultrafast photonics and spectral imaging technology. In materials science and engineering, Nankai's main research direction involves new catalytic materials and energy environment catalysis, new energy materials and chemical power sources, photoelectric conversion materials and solar cells, new carbon materials and supercapacitors, and inorganic functional materials and material storage. In electronic science and technology, Nankai mainly researches on the design and implementation of thin-film photovoltaic materials and devices, the application of high-temperature superconducting communication devices, and sensor technology and intelligent systems. In terms of information and communication engineering, Nankai develops new technologies and methods around hotspots such as Internet of Things, computer network communication, superconducting communication, and wireless sensor networks. In control science and engineering, Nankai's key research field includes advanced robot technology, control and simulation of micro-nano systems, modern logistics system engineering and optimization management technology research, and bioinformatics and biological control. In computer science and technology, Nankai mainly researches on big data processing and knowledge engineering, network and information security, and mobile cloud computing and intelligent perception. In environmental science and engineering, Nankai's key research direction includes environmental science, environmental engineering, and environmental management and economics. And in software engineering Nankai mainly researches on software engineering and software methodology, parallel software and algorithm design, data engineering, and embedded software and information security.

Applied Catalysis B: Environmental

Enhanced disinfection application of Ag-modified g-C3N4 composite under visible light
Ma, S., Zhan, S., Jia, Y., Shi, Q., Zhou, Q.

Tin phosphate as a heterogeneous catalyst for efficient dehydration of glucose into 5-hydroxymethylfurfural in ionic liquid
Hou, Q., Zhen, M., Liu, L., Chen, Y., Huang, F., Zhang, S., Li, W., Ju, M.

Efficient NH 3 -SCR removal of NO x with highly ordered mesoporous WO 3 (χ)-CeO 2 at low temperatures
Zhan, S., Zhang, H., Zhang, Y., Shi, Q., Li, Y., Li, X.

Heterogeneous electro-Fenton and photoelectro-Fenton processes: A critical review of fundamental principles and application for water/wastewater treatment
Ganiyu, S.O., Zhou, M., Martínez-Huitle, C.A.

Chemical Engineering Journal

Optimization of porous FeNi 3 /N-GN composites with superior microwave absorption performance
Feng, J., Zong, Y., Sun, Y., Zhang, Y., Yang, X., Long, G., Wang, Y., Li, X., Zheng, X.

Removal of hexavalent chromium from aqueous solutions by a novel biochar supported nanoscale iron sulfide composite
Lyu, H., Tang, J., Huang, Y., Gai, L., Zeng, E.Y., Liber, K., Gong, Y.

Experimental and modeling investigations of ball-milled biochar for the removal of aqueous methylene blue
Lyu, H., Gao, B., He, F., Zimmerman, A.R., Ding, C., Tang, J., Crittenden, J.C.

Pre-magnetized Fe0/persulfate for notably enhanced degradation and dechlorination of 2,4-dichlorophenol
Li, X., Zhou, M., Pan, Y., Xu, L.

A novel dual gas diffusion electrodes system for efficient hydrogen peroxide generation used in electro-Fenton
Yu, X., Zhou, M., Ren, G., Ma, L.

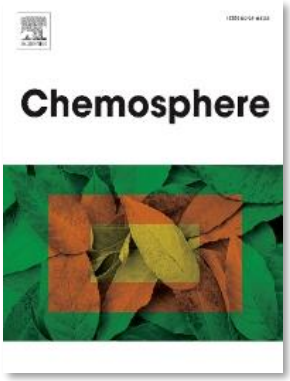
Mechanical Systems and Signal Processing

An energy-optimal solution for transportation control of cranes with double pendulum dynamics: Design and experiments
Sun, N., Wu, Y., Chen, H., Fang, Y.

Environmental, Aquatic and Agriculture 环境、水资源、农业

南开大学环境学科始建于1973 **年。**1983**年**环境科学系成立，是我国综合性大学中最早成立的环境科学系，是我国环境科学学科发展和人才培养的“发源地”。1998 **年率先在我国成立**环境科学与工程学院。学科以原有优势方向环境化学为基础，系统、深入开展了新型污染物的多介质环境行为与跨界面循环机制研究、复合污染的生态毒理效应与分子机理研究以及水、土壤**/沉**积物的环境基准研究，逐渐形成了以环境地球化学、污染生态与环境基准为方向的环境科学新的学科优势。同时，在污染土壤、沉积物及水体的生态修复与深度治理工程，以及城市大气颗粒物源解析与污染防治技术、生物质资源循环利用等方向取得了突破性进展。此外，在环境规划、风险管理、战略环境评价等方面为推动国家相关立法、环境决策做了大量工作，处于国内领先地位。

Nankai University’s studies on environmental subjects can be traced back to 1973, and, in 1983, Nankai’s Department of Environmental Science was formally established which at that time was the first environmental science department in China and became the birthplace of Chinese environmental scientists. In 1998, Nankai took the lead in China to set up the College of Environmental Science and Engineering. Leveraging its advantage in environmental chemistry, Nankai systematically and thoroughly researched on multi-medium environmental behavior and cross-interface circulation mechanism of new pollutants, ecotoxicological effects and molecular mechanism, and soil/sediment’s environmental benchmarking. Now Nankai has formed an academic advantage in environmental science on environmental geochemistry, pollution ecology and environmental benchmarks, while making breakthroughs in the areas of ecological restoration and deep treatment of contaminated soils, sediments and water bodies, urban atmospheric particulate matter analysis and pollution prevention technologies, and biomass resource recycling. Nankai also takes a leading position in China in the researches of environmental planning, risk management, and strategic environmental assessment, and promoted relevant national legislation and environmental decision-making.



Chemosphere

An overview on the removal of synthetic dyes from water by electrochemical advanced oxidation processes
Nidheesh, P.V., Zhou, M., Oturan, M.A.

Ecological and health risks assessment and spatial distribution of residual heavy metals in the soil of an e-waste circular economy park in Tianjin, China
Han, W., Gao, G., Geng, J., Li, Y., Wang, Y.

Environment International

Annual and diurnal variations of gaseous and particulate pollutants in 31 provincial capital cities based on in situ air quality monitoring data from China National Environmental Monitoring Center
Zhao, S., Yu, Y., Yin, D., He, J., Liu, N., Qu, J., Xiao, J.

Environmental Pollution

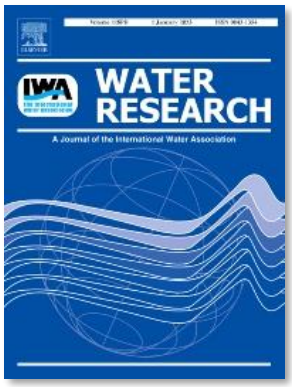
Air pollution characteristics and their relation to meteorological conditions during 2014–2015 in major Chinese cities
He, J., Gong, S., Yu, Y., Yu, L., Wu, L., Mao, H., Song, C., Zhao, S., Liu, H., Li, X., Li, R.

Health burden attributable to ambient PM 2.5 in China
Song, C., He, J., Wu, L., Jin, T., Chen, X., Li, R., Ren, P., Zhang, L., Mao, H.

Air pollution in China: Status and spatiotemporal variations
Song, C., Wu, L., Xie, Y., He, J., Chen, X., Wang, T., Lin, Y., Jin, T., Wang, A., Liu, Y., Dai, Q., Liu, B., Wang, Y.-N., Mao, H.

Effects of ball milling on the physicochemical and sorptive properties of biochar: Experimental observations and governing mechanisms
Lyu, H., Gao, B., He, F., Zimmerman, A.R., Ding, C., Huang, H., Tang, J.

Occurrence and distribution of antibiotics, antibiotic resistance genes in the urban rivers in Beijing, China
Xu, Y., Guo, C., Luo, Y., Lv, J., Zhang, Y., Lin, H., Wang, L., Xu, J.



Water Research

Prevalence and proliferation of antibiotic resistance genes in two municipal wastewater treatment plants
Mao, D., Yu, S., Rysz, M., Luo, Y., Yang, F., Li, F., Hou, J., Mu, Q., Alvarez, P.J.J.

Heterogeneous electro-Fenton using modified iron-carbon as catalyst for 2,4-dichlorophenol degradation: Influence factors, mechanism and degradation pathway
Zhang, C., Zhou, M., Ren, G., Yu, X., Ma, L., Yang, J., Yu, F.

Life Science, Biochemistry & Applied Biosciences 生命科学+生物化学+应用生物学

南开大学1919**年**创建伊始即设有生物学门，1922**年正式建立生物学系**，1978 **建立全国第一家分子生物学研究**，1993 **年成立生命科学学院。目前**，**主要有微生物、**动物学、植物学、细胞生物学、遗传学、生物化学与分子生物学等方向。特别是在细菌基因组学与技术、干细胞与发育生物学、分子与细胞遗传学、遗传工程等方向、分子免疫与肿瘤生物学、蛋白质结构与功能、生物材料与组织工程等方向形成优势。此外，在化学生物学方面已形成生物大分子化学、农药化学生物学、生物大分子动态学三个主要科研方向。

Nankai University started teaching and researching on biology at the very beginning of its establishment in 1919. The Department of Biology of Nankai University was established in 1922. Nankai established the first institute of molecular biology in China in 1978 and established the College of Life Sciences in 1993. At present, Nankai researchers focus on microbiology, zoology, botany, cell biology, genetics, and biochemistry and molecular biology. Key breakthroughs were achieved in bacterial genomics and technology, stem cell and developmental biology, molecular and cytogenetics, genetic engineering, molecular immunity and tumor biology, protein structure and function, and biological materials and tissue engineering.

In terms of Biochemistry, Nankai's three major research directions are biomacromolecular chemistry, pesticide chemical biology, and biomacromolecule dynamics.

Biochemical and Biophysical Research Communications

Co-transplantation of exosomes derived from hypoxia-preconditioned adipose mesenchymal stem cells promotes neovascularization and graft survival in fat grafting

Han, Y.-D., Bai, Y., Yan, X.-L., Ren, J., Zeng, Q., Li, X.-D., Pei, X.-T., Han, Y.

Biotechnology Advances

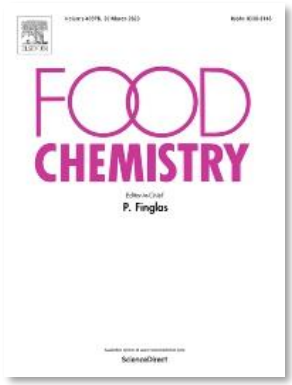
Microbial fuel cell (MFC) power performance improvement through enhanced microbial electrogenicity

Li, M., Zhou, M., Tian, X., Tan, C., McDaniel, C.T., Hassett, D.J., Gu, T.

Carbohydrate Polymers

A composite hydrogel of chitosan/heparin/poly (γ-glutamic acid) loaded with superoxide dismutase for wound healing

Zhang, L., Ma, Y., Pan, X., Chen, S., Zhuang, H., Wang, S.



Food Chemistry

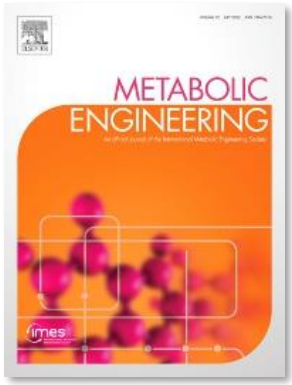
Rapid detection and quantification of 2,4-dichlorophenoxyacetic acid in milk using molecularly imprinted polymers–surface-enhanced Raman spectroscopy

Hua, M.Z., Feng, S., Wang, S., Lu, X.

Journal of Controlled Release

Singlet oxygen-responsive micelles for enhanced photodynamic therapy
Li, X., Gao, M., Xin, K., Zhang, L., Ding, D., Kong, D., Wang, Z., Shi, Y., Kiessling, F., Lammers, T., Cheng, J., Zhao, Y.

Targeted antigen delivery to dendritic cell via functionalized alginate nanoparticles for cancer immunotherapy
Zhang, C., Shi, G., Zhang, J., Song, H., Niu, J., Shi, S., Huang, P., Wang, Y., Wang, W., Li, C., Kong, D.



Metabolic Engineering

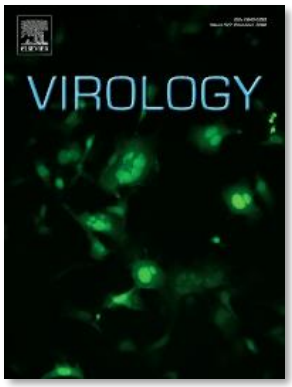
Metabolic engineering of Escherichia coli for the production of 2'-fucosyllactose and 3-fucosyllactose through modular pathway enhancement
Huang, D., Yang, K., Liu, J., Xu, Y., Wang, Y., Wang, R., Liu, B., Feng, L.

Mitochondrion

Two novel lncRNAs discovered in human mitochondrial DNA using PacBio full-length transcriptome data
Gao, S., Tian, X., Chang, H., Sun, Y., Wu, Z., Cheng, Z., Dong, P., Zhao, Q., Ruan, J., Bu, W.

Toxicology Letters

Resveratrol attenuates oxidative damage through activating mitophagy in an in vitro model of Alzheimer's disease
Wang, H., Jiang, T., Li, W., Gao, N., Zhang, T.



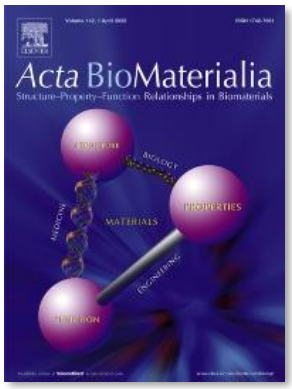
Virology

VirusDetect: An automated pipeline for efficient virus discovery using deep sequencing of small RNAs
Zheng, Y., Gao, S., Padmanabhan, C., Li, R., Galvez, M., Gutierrez, D., Fuentes, S., Ling, K.-S., Kreuze, J., Fei, Z.

Materials Science 材料

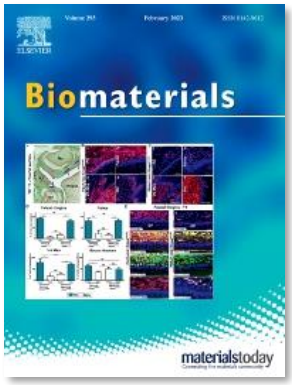
根据国家在新材料领域的发展战略和新兴交叉学科的发展趋势，南开大学于**1999年整合化学学科和物理学科在新材料**领域的优势力量，创立了材料学科。经过十余年的学科建设，南开材料学科已经在教学、科研、队伍建设和人才培养等方面得到了快速发展，并建立起较为完善的发展体系。**2018年，南开大学正式成立稀土与无机功能材料研究中心，增加了稀土与无机功能材料的科研方向。近年来**，紧密围绕新材料领域的发展趋势，形成鲜明的理工结合的交叉学科特色，科研方向主要为新催化材料与能源环境催化、新能源材料与化学电源、光电转换材料与太阳能电池、新型碳材料与超级电容器、无机功能材料与物质存储、光子学/电子学材料及器件、新材料设计与计算等。材料科学与工程入选国家重点建设一流学科。

In line with China's development strategy in the field of new materials and considering the trends of emerging interdisciplinary research development, Nankai University established the department of materials science by integrating the relevant researching resources of new materials from the departments of chemistry and physics in 1999. Since then, Nankai's materials studies has established a comprehensive development system in teaching, researching, and talents training, and expanded into the research of rare earth and inorganic functional materials after setting up the Research Center for Rare Earth and Inorganic Functional Materials in 2018. Nankai's key research directions involve new catalytic materials and energy environment catalysis, new energy materials and chemical power sources, photoelectric conversion materials and solar cells, new carbon materials and supercapacitors, inorganic functional materials and material storage, photonics/electronic materials and devices, new material design and calculations, etc. Nankai's materials science and engineering were selected into China's construction of world first-class disciplines.



Acta Biomaterialia

Surface-adaptive zwitterionic nanoparticles for prolonged blood circulation time and enhanced cellular uptake in tumor cells
Ou, H., Cheng, T., Zhang, Y., Liu, J., Ding, Y., Zhen, J., Shen, W., Xu, Y., Yang, W., Niu, P., Liu, J., An, Y., Liu, Y., Shi, L.



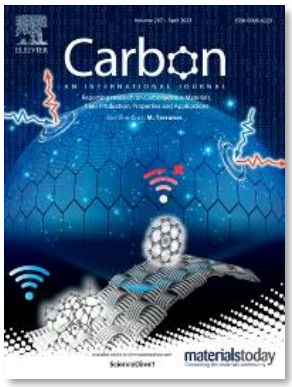
Biomaterials

Amphiphilic semiconducting polymer as multifunctional nanocarrier for fluorescence/photoacoustic imaging guided chemo-photothermal therapy
Jiang, Y., Cui, D., Fang, Y., Zhen, X., Upputuri, P.K., Pramanik, M., Ding, D., Pu, K.

Enhanced antitumor immunity by targeting dendritic cells with tumor cell lysate-loaded chitosan nanoparticles vaccine
Shi, G.-N., Zhang, C.-N., Xu, R., Niu, J.-F., Song, H.-J., Zhang, X.-Y., Wang, W.-W., Wang, Y.-M., Li, C., Wei, X.-Q., Kong, D.-L.

The effect of thick fibers and large pores of electrospun poly(ε-caprolactone) vascular grafts on macrophage polarization and arterial regeneration
Wang, Z., Cui, Y., Wang, J., Yang, X., Wu, Y., Wang, K., Gao, X., Li, D., Li, Y., Zheng, X.-L., Zhu, Y., Kong, D., Zhao, Q.

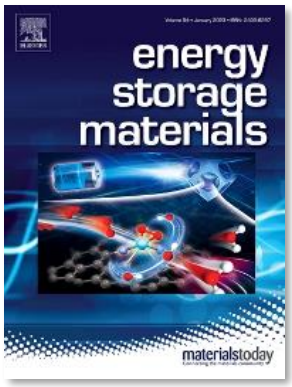
Evolution of the degradation mechanism of pure zinc stent in the one-year study of rabbit abdominal aorta model
Yang, H., Wang, C., Liu, C., Chen, H., Wu, Y., Han, J., Jia, Z., Lin, W., Zhang, D., Li, W., Yuan, W., Guo, H., Li, H., Yang, G., Kong, D., Zhu, D., Takashima, K., Ruan, L., Nie, J., Li, X., Zheng, Y.



Carbon

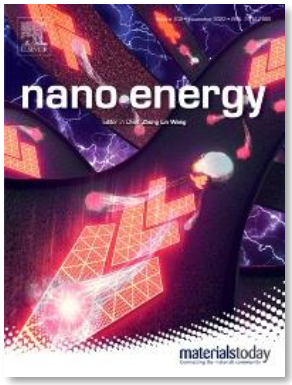
Composition and structure control of ultralight graphene foam for high-performance microwave absorption
Zhang, Y., Huang, Y., Chen, H., Huang, Z., Yang, Y., Xiao, P., Zhou, Y., Chen, Y.

Synergistically assembled MWCNT/graphene foam with highly efficient microwave absorption in both C and X bands
Chen, H., Huang, Z., Huang, Y., Zhang, Y., Ge, Z., Qin, B., Liu, Z., Shi, Q., Xiao, P., Yang, Y., Zhang, T., Chen, Y.



Energy Storage Materials

Electrospun three dimensional Co/CoP@nitrogen-doped carbon nanofibers network for efficient hydrogen evolution
Li, Y., Li, H., Cao, K., Jin, T., Wang, X., Sun, H., Ning, J., Wang, Y., Jiao, L.



Nano Energy

Structural and chemical synergistic effect of CoS nanoparticles and porous carbon nanorods for high-performance sodium storage
Zhou, L., Zhang, K., Sheng, J., An, Q., Tao, Z., Kang, Y.-M., Chen, J., Mai, L.

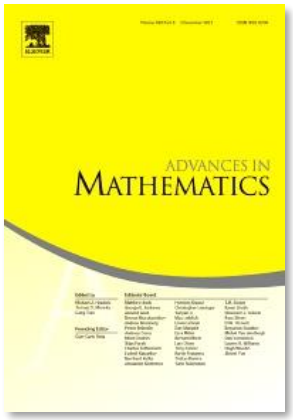
N-doped-carbon-coated Fe 3 O 4 from metal-organic framework as efficient electrocatalyst for ORR
Gao, S., Fan, B., Feng, R., Ye, C., Wei, X., Liu, J., Bu, X.

Mathematical Sciences 数学

南开大学数学学科由我国数学前辈姜立夫先生于1920 **年**创建，学科历史悠久，学风严谨，获得了许多具国际领先水平的研究成果，总体水平居国内高校前列。主要包括数学科学学院、陈省身数学研究所、组合数学研究中心。基础数学方面，在微分几何、非线性分析与辛几何、拓扑学、代数几何、李群与李代数、泛函分析等领域的研究中取得了系统的原创性研究成果。应用数学方面，在组合数学、金融风险，检索系统，网络安全，图象处理等基础理论和应用理论研究方面取得了突破性的研究成果。概率论与数理统计方面，不仅在理论研究取得了一批达到国际水平的研究成果，而且在金融和保险风险管理、生物序列比对、实验设计、质量控制、组合密码学、近代密码学等应用理论及开发方面取得了多项极具影响的优秀成果。数学、统计学入选国家重点建设一流学科。

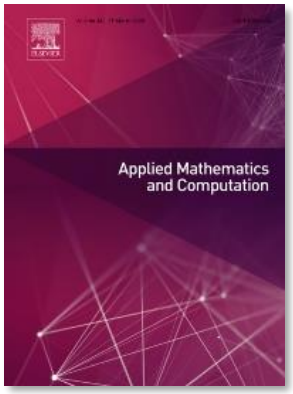
Founded by Prof. JIANG Lifu, Predecessor of modern Chinese mathematical studies, in 1920, the research and education of Mathematical Sciences at Nankai University is well known for its strict academic style and has obtained a large number of internationally leading academic outputs. the overall level ranks among the top universities in China. The research and

education of Mathematical Sciences at Nankai University is conducted mainly by and consists of the School of Mathematical Sciences, the Institute of Mathematics of CHEN Xingshen, and the Center for Combinatorial Mathematics. Systematic and original research results have been obtained by Nankai researchers in the fields of basic mathematics, differential geometry, nonlinear analysis and symplectic geometry, topology, algebraic geometry, Lie group and Lie algebra, and functional analysis. In applied mathematics, Nankai made breakthrough achievements in financial risk, retrieval systems, network security, image processing and applied theory research. In terms of probability theory and mathematical statistics, Nankai researchers not only produced a number of theoretical research results at international level, but also put their academic outputs into real-life applications in financial and insurance risk management, biological sequence comparison, experimental design, quality control, combinatorial cryptography, modern cryptography, etc. Nankai's discipline of mathematics and statistics is among China's construction of world first-class disciplines.



Advances in Mathematics

Maximum principles for the fractional p-Laplacian and symmetry of solutions
Chen, W., Li, C.



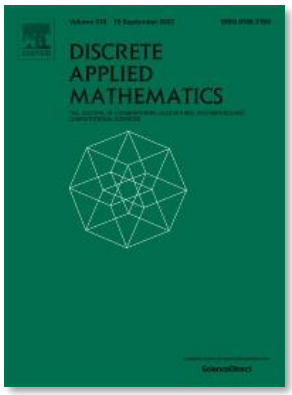
Applied Mathematics and Computation

Note on two generalizations of the Randić index
Shi, Y.

Network Entropies Based on Independent Sets and Matchings
Cao, S., Dehmer, M., Kang, Z.

Analyzing lattice networks through substructures
Lei, H., Li, T., Ma, Y., Wang, H.

Vertex-based and edge-based centroids of graphs
Lan, Y., Li, T., Ma, Y., Shi, Y., Wang, H.



Discrete Applied Mathematics

Total rainbow connection of digraphs
Lei, H., Liu, H., Magnant, C., Shi, Y.

On the generalized Wiener polarity index of trees with a given diameter
Yue, J., Lei, H., Shi, Y.

Journal of Computational and Applied Mathematics

Integral representations of bivariate complex geometric mean and their applications
Qi, F., Lim, D.

Journal of Differential Equations

Ground state solutions for some Schrödinger-Poisson systems with periodic potentials
Sun, J., Ma, S.

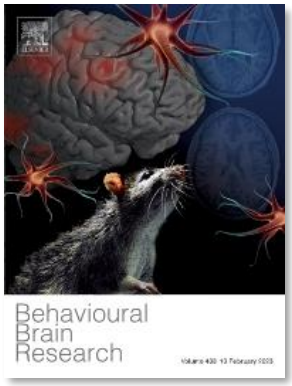
Neuroscience and Psychology , Health & Medical Sciences 神经科学和心理学+健康医学

南开大学医学学科肇始于1930年。**目前，在基**础医学方面，主要科研方向为肿瘤免疫及肿瘤干细胞相关研究；免疫抑制细胞新功能分子，免疫抑制细胞表观遗传和调控等。在临床医学

方面，主要包括内科学、外科学、老年医学、影像医学与核医学等。在口腔医学方面，主要包括口腔解剖生理学、口腔组织病理学、口腔材料学等。同时，南开大学有药学学科，在抗病毒、抗肿瘤、手性药物的设计合成和以及基于天然化合物的新药开发等方面形成研究优势。此外，1983年创建社会学系社会心理学教研室，为新中国成立后国内高校第一个社会心理学教研室，2003年成立社会心理学系。经过多年建设发展，已经成为中国社会心理学领域教学与科研重镇。

The medical discipline of Nankai University was founded in 1930. The researchers now mainly focus on tumor immunity and cancer stem cell related research, immunosuppressive cell new functional molecules, immunosuppressive cell epigenetics and regulation in basic medicine; internal medicine, surgery, geriatrics, and imaging medicine and nuclear medicine in clinical medicine; and oral anatomy and physiology, oral histopathology, and oral materials in stomatology. In terms of specific pharmaceutical science, Nankai has obtained research advantages in the design and synthesis of antiviral, antitumor, chiral drugs and the development of new drugs based on natural compounds.

Nankai's Department of Social Psychology was established in 2003, which can be traced back to China's first teaching and research office of social psychology founded by Nankai University in 1983 under the Department of Sociology. After years of construction and development, the department has become a center of teaching and research in the field of social psychology in China.



Behavioural Brain Research

Autophagy ameliorates cognitive impairment through activation of PVT1 and apoptosis in diabetes mice
Li, Z., Hao, S., Yin, H., Gao, J., Yang, Z.

Cancer Letters

HBXIP-elevated methyltransferase METTL3 promotes the progression of breast cancer via inhibiting tumor suppressor let-7g
Cai, X., Wang, X., Cao, C., Gao, Y., Zhang, S., Yang, Z., Liu, Y., Zhang, X., Zhang, W., Ye, L.

Computers in Human Behavior

How WeChat can retain users: Roles of network externalities, social interaction ties, and perceived values in building continuance intention
Zhang, C.-B., Li, Y.-N., Wu, B., Li, D.-J.

Gastroenterology

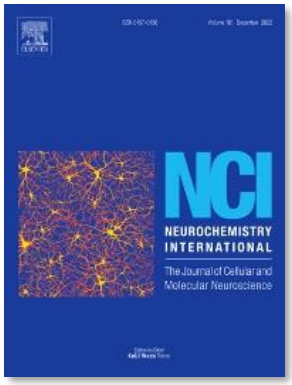
Interleukin 35 Expression Correlates With Microvessel Density in Pancreatic Ductal Adenocarcinoma, Recruits Monocytes, and Promotes Growth and Angiogenesis of Xenograft Tumors in Mice
Huang, C., Li, Z., Li, N., Li, Y., Chang, A., Zhao, T., Wang, X., Wang, H., Gao, S., Yang, S., Hao, J., Ren, H.

Journal of Endodontics

In Vitro Efficacy of XP-endo Finisher with 2 Different Protocols on Biofilm Removal from Apical Root Canals
Bao, P., Shen, Y., Lin, J., Haapasalo, M.

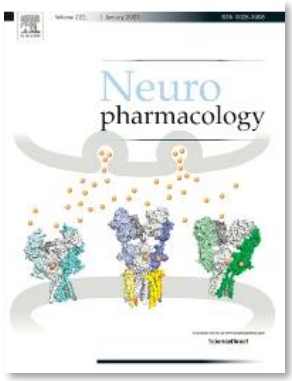
Neoplasia

A Long Noncoding RNA Perturbs the Circadian Rhythm of Hepatoma Cells to Facilitate Hepatocarcinogenesis
Cui, M., Zheng, M., Sun, B., Wang, Y., Ye, L., Zhang, X.



Neurochemistry International

Nicotine alleviates chronic stress-induced anxiety and depressive-like behavior and hippocampal neuropathology via regulating autophagy signaling
Xiao, X., Shang, X., Zhai, B., Zhang, H., Zhang, T.



Neuropharmacology

All-trans retinoic acid prevents epidural fibrosis through NF-κB signaling pathway in post-laminectomy rats
Zhang, C., Kong, X., Ning, G., Liang, Z., Qu, T., Chen, F., Cao, D., Wang, T., Sharma, H.S., Feng, S.

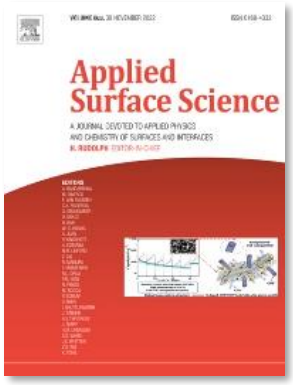
Neuroscience

Synaptic plasticity-related neural oscillations on hippocampus-prefrontal cortex pathway in depression
Zheng, C., Zhang, T.

Physics 物理

南开大学物理系创建于1919年,**由中国近代物理奠基人**饶毓泰和吴大猷等开创。经过近百年的发展，已经建立了包括光学、理论物理、凝聚态物理等学科方向在内的较为完善的学科体系，在光学仪器、光信息处理、原子核物理、高能物理、固体光谱、晶体物理等方面的教学和科研作出了重要贡献。近年来，不断促进理论物理、光学、凝聚态物理学科方向的深度交叉融合发展，以优势学科方向带动新兴交叉学科方向**“光子学与光子技**术**”的**发展，在弱光非线性光子学、光场的多维度调控等方面取得了系列成果，如基于压缩感知理论在单光子时间分辨成像光谱研究方面取得突破性进展。

Founded by Prof. RAO Yutai and Prof. WU Dayou - the fathers of Chinese modern physics - in 1919, the Department of Physics of Nankai University has a relatively complete discipline system with subjects, including optical, theoretical physics, and condensed matter, and made enormous contribution to the research and education of optical instruments, optical information processing, nuclear physics, high energy physics, solid spectroscopy, and crystal physics. In recent years, the Department of Physics deeply cross-integrated the studies of theoretical physics, optics, and condensed matter physics to utilize competitive advantage and promote the development of Nankai’s new interdisciplinary research direction -- photonics and photonics, and has made a series of breakthroughs in the weak light nonlinear photonic and the multi-dimensional light field manipulation, such as the breakthrough in single-photon time-resolved imaging spectroscopy based on the theory of compressed sensing.



Applied Surface Science

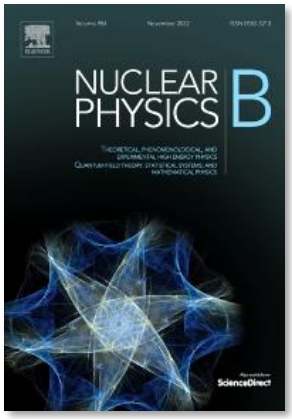
Controllable synthesis of CuS hollow microflowers hierarchical structures for asymmetric supercapacitors
Liu, Y., Zhou, Z., Zhang, S., Luo, W., Zhang, G.

Hydrothermal synthesis of red phosphorus @reduced graphene oxide nanohybrid with enhanced electrochemical performance as anode material of lithium-ion battery
Zhu, X., Yuan, Z.(Yuan Zewei), Wang, X., Jiang, G., Xiong, J., Yuan, S.

Amino acids assisted hydrothermal synthesis of hierarchically structured ZnO with enhanced photocatalytic activities
Guo, Y., Lin, S., Li, X., Liu, Y.

Journal of Luminescence

Color-tunable emission by adjusting sensitizer (Yb3+) and excitation power of 980 nm in NaGdTiO4:Yb3+/Tm3+/Er3+ phosphors for light emitting diodes
Zhou, A., Song, F., Han, Y., Song, F., Ju, D., Adnan, K., Liu, L., Feng, M.



Nuclear Physics B

Interpreting the R K (∗) anomaly in the colored Zee–Babu model
Guo, S.-Y., Han, Z.-L., Li, B., Liao, Y., Ma, X.-D.

Physica A: Statistical Mechanics and its Applications

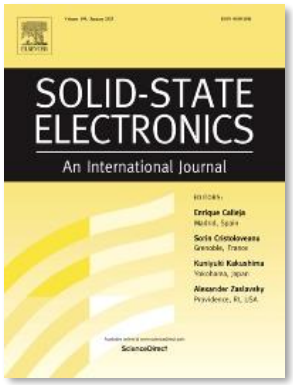
The inefficiency of cryptocurrency and its cross-correlation with Dow Jones Industrial Average
Zhang, W., Wang, P., Li, X.(Li Xiao), Shen, D.

Physics Letters B: Particle Physics, Nuclear Physics and Cosmology

Black holes in massive gravity as heat engines
Hendi, S.H., Eslam Panah, B., Panahiyan, S., Liu, H.(LiuHang), Meng, X.-H.(Meng Xinhe)

Scalar dark matter, type II seesaw and the DAMPE cosmic ray e+ + e− excess
Li, T.(LiTong), Okada, N., Shafi, Q.

Critical phenomena of static charged AdS black holes in conformal gravity
Xu, W., Zhao, L.



Solid-State Electronics

Pt nanoparticles functionalized 3D SnO2 nanoflowers for gas sensor application
Liu, Y., Huang, J., Yang, J., Wang, S.