REASONS FOR NOMINATION (min. 120 words, max 400 words)

List reason(s) why your candidate merits election to the Europasche Akademie der Naturwissenschaften (European Academy of Natural Sciences). Explanations such as “The candidate is outstanding in his field” are not substantial. Evidence and examples should be given why the candidate is outstanding in his/her field. The first reason you give has to be a statement that can be used as citation describing the candidate’s excellence. For non-European candidates, provide evidence of sustained collaboration with European institutions and European centres of scholarship.

Professor Zhang has been teaching, researching and promoting analytical chemistry and molecular diagnostics for more than 30 years. Based on major scientific issues such as population health and life safety and focusing on accurate diagnosis and treatment of malignant tumors, he has published 217 SCI-indexed papers and ten books. He focuses on three research areas:

(1) Biosensing of tumor markers

The construction of new nanoprobes and cyclic amplification strategies, highly sensitive and highly specific detection of tumor cells and tumor markers has been achieved, effectively reduced false signals, and developed diagnostic kits to analyze tumor markers rapidly.

(2) Development of imaging instruments

By developing broadband adaptive differential quartz crystal microbalance, photoelectrochemical analyzer, and small animal PET/CT/FMI three-modal fusion imaging instrument, the application of multimodal imaging technology in tumor diagnosis and treatment has been applied in practice. The PET resolution in PET/CT/FMI three-modal fusion imaging instrument has reached the international leading.

(3) Integrated technology for tumor diagnosis and treatment

Nano-drug carrier integrated targeting, imaging, and therapeutic multi-functional diagnosis and treatment have been constructed. Drug carriers targeted tumor cells can achieve controlled release of anticancer drugs without damaging normal tissues, realizing synchronous diagnosis and treatment, and improving the effect of accurate tumor diagnosis and targeted therapy.

Professor Zhang visited to the University of Paderborn, Germany, in 2005, and the cooperative relationship has been established. He recruited Doctor Enguo Fan from Martin-Luther University and Xinglin Zhang from Utrecht University in 2020, and they are the important members in professor Zhang's lab. Another member in the lab, Doctor Ying Wang visited in Georg-August-University of Göttingen in Germany as the academic in 2019. Doctor Fengli Shao and Yan Zhao attended Goldschmidt International Academic Conference in Spain in 2019.

As the president of Linyi university, Professor Zhang has established cooperation with universities such as Swansea University and University of Sunderland in UK, Maria Curie-Sklodowska University in Poland and other 5 universities to build a platform. As a member, Linyi university has joined the China-CEE Higher Education Association, China-Russia (Shandong) International Education Cooperation Union. Now, he is preparing the conference on the construction of China-Finland applied university of 2023 with University of Applied Science and Technology in Finland. Additionally, he is planning to set up a non-independent legal entity: International School of Biological Resources Application of Linyi University, with National University of Life and Environmental Sciences and Lviv National Polytechnic University in Ukraine.

ACHIEVEMENTS (max. 300 words)

List important functions in academic or international bodies or in funding agencies, journals, conferences. List (most) important Prizes, Awards, and election into national Academies, but do not list irrelevant memberships in association, organisation, committees etc. These should be national and international prizes, or other honours, e.g. medals recognising sustained academia distinction; election to national Academies. Fellowships in scientific organisations and international associations etc. are not significant recognition.

Important achievements

(1) He is the winner of the National Fund for Distinguished Young Scholars, the head of the biochemical analysis innovation team of the Ministry of Education, and an outstanding national teacher. He receives the special government allowance issued by the State Council and was selected for the National Ten Thousand Talents Project. He was awarded the "Young and Middle-aged Expert with Outstanding Contributions" title. He was awarded as New Century Excellent Talents by the Ministry of Education, was selected in the Shandong Taishan Scholars Climbing Program, and was the chief expert of universities in Shandong Province.

(2) He is also the executive director of China Organic Electrochemistry and Industry Federation, the vice-chairman of Shandong Environmental Science Society, the director of Shandong Overseas Chinese Federation Special Expert Biology and Medicine Committee. He is the deputy editor-in-chief of Frontiers in Chemistry and the editorial board of the Journal of Chemistry, Analytical Chemistry, and Applied Chemistry. He worked as an evaluation expert for science and technology awards of the Ministry of Education and an evaluation expert of the Analytical Chemistry Group of the Chemical Science Department of the National Foundation of China.

Awards

1. (2014) Received the Second Prize in Natural Science of the Ministry of Education of China (Rank First).
2. (2020, 2010, 2008) Received the Second prize of Natural Science in Shandong Province for three times (Rank First).
3. (2007) Received the Second Prize of Science and Technology Progress of Shandong Province (Rank First).

PUBLICATIONS (max. 10 works)

List the candidate's major and most recent publications and provide evidence of (scientific) impact where available or appropriate.

1. Sai Bi, Shuzhen Yue, **Shusheng Zhang*.** Hybridization chain reaction: a versatile molecular tool for biosensing, bioimaging, and biomedicine. ***Chem. Soc. Rev.***, 2017, 46: 4281~4298. **Essential Science Indicators Citation: 450**

2. Wei Wang, Lin Li, Shufeng Liu, Cuiping Ma, **Shusheng Zhang***. Determination of physiological thiols by electrochemical detection with piazselenole and its application in rat breast cancer cells 4T-1. ***J. Am. Chem. Soc.***, 2008, 130: 10846~10847. **Essential Science Indicators Citation: 136**

3. Sai Bi, Yameng Yan, Shuangyuan Hao, **Shusheng Zhang***. Colorimetric Logic Gates Based on Supramolecular DNAzyme Structures. ***Angew. Chem. Int. Ed.***, 2010, 49(26): 4438~4442. **Essential Science Indicators Citation: 115**

4. Hong Zhou, Jing Liu, Jing-Juan Xu*, **Shusheng Zhang***, Hong-Yuan Chen. Optical nano-biosensing interface via nucleic acid amplification strategy: construction and application. ***Chem. Soc. Rev.***, 2018, 47: 1996~2019. **Essential Science Indicators Citation: 124**

5. Caixia Wang, Bo Wu, Yuting Wu, Xinyue Song, **Shusheng Zhang***, Zhihong Liu*. Camouflaging Nanoparticles with Brain Metastatic Tumor Cell Membranes: A New Strategy to Traverse Blood-brain Barrier for Imaging and Therapy of Brain Tumors. ***Adv. Funct. Mater.***, 2020, 30(14): 1909369. **Essential Science Indicators Citation: 110**

6. Zhongfeng Gao, Rui Liu, Jinhua Wang, Jun Dai, Weihua Huang, Mingjie Liu, Shutao Wang, Fan Xia*, **Shusheng Zhang***, Lei Jiang. Manipulating the hydrophobicity of DNA as a universal strategy for visual biosensing. ***Nat. Protoc.***, 2020, 15: 316~337. **Essential Science Indicators Citation: 11**

7. Zhen Zhang, Yuanyuan Wang, Ningbo Zhang, **Shusheng Zhang***. Self-assembly of nucleic acid molecular aggregates catalyzed by a triple-helix probe for miRNA detection and single cell imaging. ***Chem. Sci.***, 2016, 7: 4184~4189. **Essential Science Indicators Citation: 67**

8. Sai Bi, Hong Zhou, **Shusheng Zhang***. A novel synergistic enhanced chemiluminescence achieved by a multiplex nanoprobe for biological applications combined with dual-amplification of magnetic nanoparticles. ***Chem. Sci.***, 2010, 1(6): 681~6879. **Essential Science Indicators Citation: 61**

9. Dongmei Xi, Jizhen Shang, Enguo Fan, Jinmao You, **Shusheng Zhang***, Hua Wang*, Nanopore-Based Selective Discrimination of MicroRNAs with Single-Nucleotide Difference Using Locked Nucleic Acid-Modified Probes, ***Anal. Chem.,*** 2016, 88(21): 10540~10546. **Essential Science Indicators Citation: 54**

10. Cheng Tian, Lei Zhao, Jin Zhu*, **Shusheng Zhang***. Simultaneous detection of trace Hg^{2+} and Ag^{+} by SERS aptasensor based on a novel cascade amplification in environmental water. ***Chem. Eng. J.***, 2022, 435, 133879. **Essential Science Indicators Citation: 11**

BIOGRAPHY WITH PHOTO:

SHU-SHENG ZHANG

ORCID: 0000-0002-8416-8331
Email: shushzhang@126.com
Web: https://publons.com/researcher/1831078/zhang-shusheng/

Prof. Shusheng Zhang received his master degree in chemistry from Shanxi Normal University in 1990, with Prof. Zhujun Zhang as his advisor at research fields of chemiluminescence analysis. In 1999, he received his doctor degree in chemistry from Nanjing University, with academician Hongyuan Chen as his advisor at research fields of electrochemical analysis. Since then, he served as the director of the Key Laboratory of Tumor Marker Sensing Analysis of the Ministry of Education, the director of the State Key Laboratory of Ecology and Chemical Engineering, the director of the Shandong Provincial Key Laboratory of Tumor Marker Detection Technology, the director of the Academic Department of Linyi University, and a member of the Party Committee of Linyi University, Vice President, Director of Academic Committee. He is now the president of Linyi University.

Professor Zhang is the winner of the National Fund for Distinguished Young Scholars, the head of the biochemical analysis innovation team of the Ministry of Education, and an outstanding national teacher. He receives the special government allowance issued by the State Council and was selected for the National Ten Thousand Talents Project. He was awarded the "Young and Middle-aged Expert with Outstanding Contributions" title. He was awarded as New Century Excellent Talents by the Ministry of Education, was selected in the Shandong Taishan Scholars Climbing Program, and was the chief expert of universities in Shandong Province. In 2019 and 2020, he was chosen on Elsevier's list of highly cited scholars in China. He is also the executive director of China Organic Electrochemistry and Industry Federation, the director of the 38th China Chemical Industry Association, the vice-chairman of Shandong Environmental Science Society, the director of Shandong Overseas Chinese Federation Special Expert Biology and Medicine Committee, and the director of Shandong Province and Qingdao City Clothing and Protection Society. He is the deputy editor-in-chief of Frontiers in Chemistry and the editorial board of the Journal of Chemistry, Analytical Chemistry, and Applied Chemistry. He worked as an evaluation expert for science and technology awards of the Ministry of Education and an evaluation expert of the Analytical Chemistry Group of the Chemical Science Department of the National Foundation of China.

Based on major scientific issues such as population health and life safety and focusing on accurate diagnosis and treatment of malignant tumors, Professor Zhang focuses on three research areas: tumor marker biosensing, imaging analysis instrument development, and tumor diagnosis and treatment integrated technology. With tumor diagnosis and treatment as the goal, closely linked to bioanalytical chemistry and molecular diagnostics, through the construction of new nanoprobes and cyclic amplification strategies, highly sensitive and highly specific detection of tumor cells and tumor markers has been achieved, effectively reduced false signals, and developed diagnostic kits to analyze tumor markers rapidly. By developing broadband adaptive differential quartz crystal microbalance, photoelectrochemical analyzer, and small animal PET/CT/FMI three-modal fusion imaging instrument, the application of multimodal imaging technology in tumor diagnosis and treatment has been applied in practice, and the improvement of tumor diagnosis and therapy has been achieved. It provides technical support for accurate localization, imaging, and precise diagnosis of tumor sites. A nano-drug carrier integrated targeting, imaging, and therapeutic multi-functional diagnosis and treatment has been constructed, which improves the effect of precise tumor diagnosis and targeted therapy. Professor Zhang has mentored 24 PhD students and 62 master students. Since 2005, he has published 217 SCI-indexed papers in important international and domestic academic journals and ten books.

PROJECT MANAGEMENT, GRANTS OR FUNDING RECEIVED:

No.	Project Title	Time Period	Sponsor	Duty	Grant Number	Amount /RMB
1	Application of multifunctional nanonuclide drug delivery system in tumor imaging and therapy	2023.01-2026.12	National Natural Science Foundation of China	Principle Investigator	22274068	540,000
2	α nuclear medicine intelligent response delivery system	2021.12-2023.12	The central government guides local science and technology development projects	Principle Investigator	YDZX2021003	300,000
3	Construction of aptamer-functionalized novel Raman nanotags based on nucleic acid amplification technology and its application in the detection of trace heavy metal ions in the environment	2021.01-2024.12	National Natural Science Foundation of China	Principle Investigator	22076073	640,000
4	Collaborative innovation center for integration of tumor marker detection technology, equipment and diagnosis and treatment	2020.01-2022.12	Shandong Provincial Department of Education	Principle Investigator	Lu Jiao Ke Zi (2019) No. 1	18000,000
5	Construction of a controllable three-dimensional plasmonic probe and its application in single-cell imaging analysis	2018.01-2021.12	National Natural Science Foundation of China	Principle Investigator	21775063	650,000
6	Application of biofunctionalized nanocarriers in targeted tumor cell imaging and controlled drug release	2018.08-2020.12	Major Basic Research Project of Shandong Natural Science Foundation	Principle Investigator	ZR2018ZC0231	1000,000
7	Shusheng zhang, shandong science and technology leading talent innovation studio	2018.01-2020.12	Shandong Provincial Department of Science and Technology	Principle Investigator	Lu Jiao Ji Jin Zi (2016) No. 5	1000,000
8	Construction of a single-molecule biomimetic interface and its application in imaging analysis	2016.01-2020.12	National Natural Science Foundation of China-major project	Principle Investigator	21535002	3000,000
9	Tumor marker sensing analysis	2015.01-2019.12	Tarzan Scholars Climbing Program	Principle Investigator	Lu Zheng Ban Zi (2015) No. 16	3500,000
10	Small animal PET/CT/FMI three-modal fusion imaging system	2017.08-2019.07	Major basic research projects of the Natural Science Foundation of Shandong Province	Principle Investigator	ZR2017ZC0226	5000,000

11	Research on single molecule detection technology of tumor markers,	2016.01-2018.12	Leading Talents Prospective Research Project of Shandong Province	Principle Investigator	ZR2016QZ001	1000,000
12	Biochemical analysis talent team	2016-2020	Biochemical Analysis Talent Team of Shandong Province Higher School Chemistry Advantage Discipline	Principle Investigator	Lu Jiao Ren Zi (2015) No. 18	6000,000
13	Biochemical analysis	2016.01-2018.12	Ministry of Education Innovation Team Development Program (rolling support)	Principle Investigator	Teaching Technology Letter (2015) No. 88	3000,000
14	Development of a broadband adaptive differential quartz crystal microbalance with integrated electrochemical method and its application in tumor marker detection	2013.01-2016.12	National Natural Science Foundation of China-Special Fund for Basic Research of Scientific Instruments	Principle Investigator	21227008	3100,000
15	Single-molecule detection and imaging analysis of tumor markers	2013.01-2016.12	National Natural Science Foundation of China	Principle Investigator	21275086	800,000
16	Applied chemistry innovation team,	2010.12-2013.12	Outstanding Innovation Team Research Award Fund of Qingdao City	Principle Investigator	Youth Committee (2010) No. 118	1000,000
17	Biochemical analysis and detection technology and application of tumor markers	2010.01-2012.12	Shandong Provincial Department of Education Science and Technology Program	Principle Investigato	Lu Jiao Ke Han (2010) No. 4	480,000
18	Study on electrochemical detection technology of marine red tide toxin	2010.01-2012.12	Shandong Science and Technology Plan	Principle Investigator	Lu Cai Jiaozi (2009) No. 101	500,000
19	Biochemical analysis and detection technology and application of tumor markers	2011.12-2014.12	Provincial and ministerial joint construction of national key laboratory cultivation base-- Key Laboratory of Ecological Chemical Industry of Qingdao, Innovation System Construction Plan of Qingdao	Principle Investigator	11-1-2-4-jch	500,000
20	Biochemical analysis innovation team	2011.12-2014.12	Innovation Team of the Ministry of Education's "Changjiang Scholars and Innovation Team Development Program"	Principle Investigator	Teaching Technology Letter (2011) No. 88	3000,000
21	Research and system design	2010.01-	National 973 Program	Principle	2010CB73	3500,000

	of sensing and imaging methods based on biomimetic molecular recognition	2014.12	sub-project (National Basic Research Program of China)	Investigator	2404	
22	Photoelectrochemical sensing analysis method for tumor markers	2011.01-2014.12	National Science Fund for Distinguished Young Scholars	Principle Investigator	21025523	2000,000
23	Development of flow injection capillary electrophoresis equipment based on rapid detection of marine red tide toxins	2010.12-2012.12	Applied Basic Research Program of Qingdao City	Principle Investigator	10-3-4-4-5-jch	200,000
24	Detection of intracellular phytohormones in single cells by capillary electrophoresis electrochemical enzyme-linked immunosorbent assay	2008.12-2011.12	Doctoral Fund of the Ministry of Education	Principle Investigator	20080426000 1	60,000
25	Development of a new instrument for photoelectrochemical analysis	2009.01-2011.12	National Natural Science Foundation of China-Fundamental Research Funds for Scientific Instruments	Principle Investigator	20827005	1100,000
26	Reform and practice of postgraduate training program in chemistry	2009.12-2012.12	Graduate Education Innovation Program Project of Shandong Province	Principle Investigator	SDYY090 24	20,000
27	Study on electrochemical enzyme-linked immunoassay by chip capillary Electrophoresis and its application in plant serology detection technology	2008.01-2010.12	National Natural Science Foundation of China	Principle Investigator	20775038	300,000
28	Detection of intracellular phytohormones in single cells by capillary electrophoresis electrochemical enzyme-linked immunosorbent assay	2008.12-2011.12	Outstanding Youth Fund of Shandong Province	Principle Investigator	JQ200805	500,000
29	New technology and new instrument for the rapid detection of marine red tide toxins on-line by capillary electrophoresis	2007.12-2010.12	National High Technology Research and Development Program of China (863 Program)	Principle Investigator	2007AA09 Z113	910,000
30	Electrochemical synthesis of conductive polymer materials, third-order nonlinear optical properties and development of electro-optical devices	2007.12-2009.12	Science and Technology Development Plan of Qingdao City	Principle Investigator	07-2-3-11-jch	100,000
31	Research on new tissue	2006.12-	Key science and	Principle	2006GG22	100,000

	composite scaffolding materials	2008.12	technology Project of Shandong Province	Investigator	03024	
32	Application research of high-throughput microfluidic chip chemical reactor/synthesis and properties of fluorine-containing liquid crystal polymer materials	2006.12-2008.12	Science and Technology Development Plan of Qingdao City (the third batch) - special project for the introduction of high-level scientific and technological talents	Principle Investigator	06-3-1-4-yx	300,000
33	Construction of chemistry teaching base for engineering basic courses	2006.01-2008.12	Key Funding Projects for Teaching Reform of Higher Education Institutions of Shandong Province in 2005	Principle Investigator	A05011	40,000
34	Electrochemical enzyme-linked immunosorbent assay by chip capillary electrophoresis and its application in plant virus detection	2006.12-2009.12	Natural Science Foundation of Shandong Province - key project	Principle Investigator	Z2006B01	80,000
35	Synthesis and characterization of glycoside functional complexes and research on DNA biosensors	2005.01-2007.12	New Century Excellent Talents Support Program of the Ministry of Education	Principle Investigator	NCET-04-0649	500,000
36	Synthesis and performance study of liquid crystal display materials using 2-fluoro-4-hydroxybenzonitrile as intermediate	2006.01-2007.12	Outstanding young-adult Scientists Award Fund of Shandong Province	Principle Investigator	,2005BS04007	80,000
37	Research on new composite scaffolds for bone tissue engineering	2005.11-2007.12	, Science and Technology Talents Special Program of Qingdao City	Principle Investigator	05-2-JC-80	200,000
38	Research on biodegradable amino acid-based novel tissue engineering materials,	2005.01-2007.12	Science and Technology Development Plan of Qingdao City	Principle Investigator	05-1-GX-09	170,000
39	Joint open laboratory of applied chemistry, state key laboratory of organofluorine,	2005.01-2007.12	Condition Construction Special Plan of Qingdao City	Principle Investigator	05-2-YX-107	100,000
40	Electrochemical study on the mechanism and biological function of glycoside functional complexes with DNA	2003.01-2005.12	National Natural Science Foundation of China	Principle Investigator	20275020	240,000
41	Study on enzymatic catalytic reaction of voltammetric ELISA system and its application in biotoxin detection technology in food	2005.01-2005.12	National Natural Science Foundation of China	Principle Investigator	20475030	100,000
42	Synthesis and biological activity of glycoside	2003.01-2005.12	Natural Science Foundation of Shandong	Principle Investigator	Z2002B02	100,000

	functional complexes		Province-Key Project			
43	Synthesis and properties of a series of fluorine-containing liquid crystal display materials	2004.01-2005.12	Outstanding young-adult Scientists Award Fund of Shandong Province	Principle Investigator	03BS081	80,000
44	Study on enzymatic catalytic reaction of voltammetric ELISA system and its application in detection technology of zoonotic disease pathogens in food	2004.01-2006.12	Shandong Provincial Department of Education Science and Technology Program Project	Principle Investigator	J04B12	50,000
45	X-ray diffraction analysis of glycoside functional complexes	2001.12-2003.12	The fifth batch of young and young-adult academic backbone training funds of the Shandong Provincial Department of Education	Principle Investigator	Lu Jiao Ke Zi (2001) No. 39	80,000
46	Electroanalytical chemistry study on functional complexes of grafted sugars and metal ions (including rare earths)	2000.01-2002.12	Natural Science Foundation of Shandong Province	Principle Investigator	Q99B16	35,000

HONORS AND AWARDS:

1. (2014, 01) Won the second prize of natural science award for outstanding achievements in scientific research of higher education institutions of the ministry of education
2. (2009, 05) Won the first prize of higher education teaching achievements in Shandong Province
3. (2022, 01) Won the second prize of natural science of Shandong Province
4. (2021, 01) Won the second prize of natural science of Shandong Province
5. (2020, 01) Won the second prize of natural science of Shandong Province
6. (2010, 01) Won the second prize of natural science of Shandong Province
7. (2008, 04) Won the second prize of natural science of Shandong Province
8. (2007, 04) Won the second prize of science and technology progress of Shandong Province
9. (2010, 04) Won the third prize of provincial teaching achievement of Shandong Graduate Education
10. (2009, 01) Won the first prize of natural science category of Shandong university excellent scientific research achievement award
11. (2007, 08) Won the second prize of natural science of Qingdao
12. (2004, 12) Won the second prize of natural science of Qingdao
13. (2015, 12) Selected into the National Talent Project and awarded the honorary title of "Young and middle-aged experts with outstanding contributions"
14. (2015, 11) As the team leader, the biochemical analysis team was approved as the rolling support program for innovation teams of the Ministry of Education
15. (2015, 05), Awarded the Shandong Provincial labor medal of "Enriching the People and Revitalizing lu"
16. (2015, 01) Selected as special professor of Shandong Taishan Scholars Climbing Program
17. (2010) Supported by the National Science Foundation for distinguished young scholars
18. (2010) Received special government allowance from the State Council
19. (2009, 09) Won the honorary title of National Excellent Teacher
20. (2008, 04) Awarded the title of young and middle-adult expert with outstanding contributions in Shandong Province
21. (2006, 09) Awarded the honorary title of the seventh top ten outstanding teachers in Shandong Universities
22. (2006, 03) Won the honorary title of Qingdao top ten outstanding youth

23. (2005, 01) Awarded the title of New Century Excellent Talents by the Ministry of Education
24. (2003, 12) Awarded the honorary title of outstanding young intellectual of Shandong Province

FULL PUBLICATIONS LIST:

1. Xinyue Song*, Fengyan Li, Feng Tian, Linlin Ren, Qi Wang, Chengfang Jiang, Tao Yan, **Shusheng Zhang***, Upconversion nanoparticle-based optogenetic nanosystem for photodynamic therapy and cascade gene therapy, *Acta Biomater.*, 2023, 157, 538-550.
2. Yanmei Zhou, Shupu Xie, Bo Liu, Cong Wang, Yibo Huang, Xiaoru Zhang*, **Shusheng Zhang***, Chemiluminescence Sensor for miRNA-21 Detection Based on CRISPR-Cas12a and Cation Exchange Reaction, *Anal. Chem.*, 2023, 95, 6, 3332–3339.
3. Lei Yang, Ling Jiang, Feifei Xu, Hongyong Zheng, Miaomiao Liu, Pengfei Shi*, **Shusheng Zhang***, Xiangzhi Song*, Hydrogen sulfide activatable NIR-II fluorescent probe for highly specific imaging of breast cancer, *Sensor Actuat B-Chem.*, 2023, 379, 133251.
4. Cheng Tian, Lei Zhao, Guoliang Qi, **Shusheng Zhang***, Trace detection of *e. coli* O157:H7 cells by an Au nanoparticle-based SERS aptasensor, *ACS Appl. Nano Mater.*, 2023, 6, 2, 1386-1394.
5. Wanqing Teng, Jing Zhao, Qi Li, Pengfei Shi, Jing Zhang, Mei Yan*, **Shusheng Zhang***, A DNAzyme-mediated signal amplification biosensor for ultrasensitive detection of lead ions based on SERS tags, *Sens. Diagn.*, 2023, 2, 132-139.
6. Huimin Zhou, Yao Jiang*, Wenjing Zhao, **Shusheng Zhang***, Light-activated nanodevice for on-demand imaging of miRNA in living cells via logic assembly, *ACS Appl. Mater. Interfaces*, 2022, 14(11) 13070-13078.
7. Yao Jiang, Huimin Zhou, Wenjing Zhao, **Shusheng Zhang***, ATP-triggered drug release of self-assembled 3D DNA nanostructures for fluorescence imaging and tumor therapy, *Anal. Chem.*, 2022, 94, 6771-6780
8. Huairong Zhang, Yong Liu, Mei Yao, Wenxiu Han, **Shusheng Zhang***, Cathodic electrochemiluminesence microscopy for imaging of single carbon nanotube and nucleolin at single tumor cell, *Anal. Chem.*, 2022, 95, 570-574.
9. Ruwen Xie, Na Li, Zunhua Li, Jinrong Chen, Kaixuan Li, Qiang He, Lishang Liu*, **Shusheng Zhang***, Liquid crystal droplet-based biosensors: promising for point-of-care testing, *Biosensors*, 2022, 12, 758.
10. Yuhan Wang , Peixuan Zhao, Shihao Zhang, Kexiao Zhu, Xiaoya Shangguan, Lishang Liu*, **Shusheng Zhang***, Application of janus particles in point-of-care testing, *Biosensors*, 2022, 12, 689.
11. Wenjing Zhao, Yao Jiang,* Huimin Zhou, **Shusheng Zhang***, Hairpin-functionalized DNA tetrahedra for miRNA imaging in living cells via self-assembly to form dendrimers, *Analyst*, 2022, 147, 2074-2079
12. Kaixiu Chen, Xinran Sun, Yingyan Liu, Yapu Yang, Min Shi, Jie Yu, **Shusheng Zhang***, Pengfei Shi*, CeO2-Decorated Metal-Organic Framework for Enhanced Photodynamic Therapy*, Inorg. Chem.*, 2022, 61, 16307-16316.
13. Wenxiu Han, Zizhen Wei, Lu Feng, Mei Yao, Huairong Zhang*, **Shusheng Zhang***, Single-Site Fe-NC Atom Based Carbon Nanotubes for Mutually Promoted and Synergistic Oncotherapy, *ACS Appl. Mater. Interfaces*, 2022, 14, 48356-48367.
14. Feng Tian, Fengyan Li, Linlin Ren, Qi Wang, Chengfang Jiang, Yuqi Zhang, Mengmeng Li, Xinyue Song*, **Shusheng Zhang***, Acoustic-based theranostic probes activated by tumor microenvironment for accurate tumor diagnosis and assisted tumor therapy, *ACS Sens.*, 2022, 7, 12, 3611-3633.
15. Xiao Zhu-Ge, Dongmei Xi*, **Shusheng Zhang***, Multimodal tumor therapy based on chemodynamic therapy, *Chinese J. Anal. Chem.*, 2022, 50.8, 100121.
16. Yingnan Sun*, Qingqing Tian, Yongshu Liu, Kunming Xing, Yuyan Li, Yumin Liu, **Shusheng Zhang***, Droplet-based microfluidic platform for high spatiotemporal resolved single-cell signaling profiling, *Chemosensors*, 2022, 10 (12) 521.
17. Mei Yao, Wenxiu Han, Lu Feng, Zizhen Wei, Yong Liu, Huairong Zhang*, **Shusheng Zhang***, pH-programmed responsive nanoplatform for synergistic cancer therapy based on single atom catalysts, *Eur. J. Med. Chem.*, 2022, 233, 114236.

18. Xinyue Song, Fengyan Li, Tao Yan, Feng Tian, Linlin Ren, Chengfang Jiang, Qi Wang, **Shusheng Zhang***, Research progress in the sample pretreatment techniques and advanced quick detection methods of pesticide residues, *Process Saf. Environ.*, 2022, 615, 610-622.
19. Feifei Xu, Qing Wang, Ling Jiang, Fawei Zhu, Lei Yang*, **Shusheng Zhang***, Xiangzhi Song*, Evaluation of nitric oxide fluctuation via a fast, responsive fluorescent probe in idiopathic pulmonary fibrosis cells and mice models, *Anal. Chem.*, 2022, 94, 4072-4077.
20. Xinran Sun, Guoda Zhang, Xilai Ding, Yingyan Liu, Kaixiu Chen, Pengfei Shi*, **Shusheng Zhang***, A DNA functionalized metal-organic framework combined with magnesium peroxide nanoparticles: targeted and enhanced photodynamic therapy, *Mater. Chem. Front.*, 2022, 6, 956-965.
21. Cheng Tian, Lei Zhao, Guoliang Qi, Jin Zhu*, **Shusheng Zhang***, One-pot and rapid detection of SARS-CoV-2 viral particles in environment using SERS aptasensor based on a locking amplifier, *Sens. Actuat. B-Chem.*, 2022, 371, 132445.
22. Xiaoru Zhang*, Yonghao Ge, Minghui Liu, Yujiao Pei, Peng He, Weiling Song, **Shusheng Zhang***, DNA-Au Janus Nanoparticles for In Situ SERS Detection and Targeted Chemo-photodynamic Synergistic Therapy, *Anal. Chem.*, 2022, 94, 22, 7823-7832.
23. Chao Wang, Kexiao Zhu, Pengfei Shi, Xilai Ding, **Shusheng Zhang***, Rapid and label-free detection of aflatoxin B1 using a rationally truncated aptamer and via circular dichroism measurement, *Chem. Commun.*, 2022, 58, 4779-4782.
24. Yingnan Sun*, Yuhan Song, Haohan Sun, Qingqing Tian, Qian Wang, Yongshu Liu, **Shusheng Zhang***, Au nanoparticles on superhydrophobic scaffolds for large area surface-enhanced raman scattering substrates, *ACS Appl. Nano Mater.*, 2022, 5, 11080-11090.
25. Cheng Tian, Lei Zhao, Jin Zhu*, **Shusheng Zhang***, Simultaneous detection of trace Hg^{2+} and Ag^{+} by SERS aptasensor based on a novel cascade amplification in environmental water, *Chem. Eng. J.,* 2022, 435, 133879.
26. Huimin Zhou, Yao Jiang, Wenjing Zhao, **Shusheng Zhang***, Light-activated nanodevice for on-demand imaging of miRNA in living cells via logic assembly, *ACS Appl. Mater. Interfaces,* 2022, 14, 13070-13078.
27. Cheng Tian, Lei Zhao, Jin Zhu*, **Shusheng Zhang***, Ultrasensitive detection of trace Hg^{2+} by SERS aptasensor based on dual recycling amplification in water environment, *J. Hazard. Mater.,* 2021, 416, 126251.
28. Dongmei Xi, Mengjie Cui, Xin; ZhugeZhou Xiao, Yaxian Ge, Ying Wang*, **Shusheng Zhang***, Nanopore-Based Single-Molecule Investigation of DNA Sequences with Potential to Form i-Motif Structures, *ACS Sens.*, 2021, 6, 2691-2699.
29. Yao Jiang, Xiangjuan Kong, Yanxialei Jiang, Wenjing Zhao, Huimin Zhou, **Shusheng Zhang***, DNA nanodevices for base excision repair regulates ATP in situ imaging and tumor therapy, *ACS Appl. Bio Mater.*, 2021, 3, 8507-8514.
30. Yuhan Song, Qingqing Tian, Jianhong Liu, Wenting Guo, Yingnan Sun*, **Shusheng Zhang***, A Reusable single-cell patterning strategy based on ultrathin metal microstencil, *Lab on a Chip*, 2021, 21, 1590-1597.
31. Yingshu Guo*, Xiaofei Zheng, Tingting Gai, Zhiyong Wei, **Shusheng Zhang***, Co-biomembrane coated Fe3O4/MnO2 multifunctional nanoparticles for targeted delivery and enhanced chemodynamic/photothermal/chemo therapy, *Chem. Commun.,* 2021, 57, 5754-5757.
32. Yingshu Guo*, Xiuping Cao, Tingting Gai, **Shusheng Zhang***, Au-Fe_3O_4 nanoagent coated cell membrane for targeted delivery and enhanced chem/photo therapy *Chem. Commun.*, 2021, 57, 10504-10507.
33. Yong Liu, Mei Yao, Wenxiu Han, Huairong Zhang*, **Shusheng Zhang***, Construction of a single-atom nanozyme for enhanced chemodynamic therapy and chemotherapy, *Chem. Eur. J.*, 2021, 27, 13418-13425.
34. Yingshu Guo*, Yinhua Hu; Xiaofei Zheng; Xiuping Cao; Qiong Li; Zhiyong Wei; Zhenkai Zhu, **Shusheng Zhang***, Self-assembled peptide nanoparticles with endosome escaping permits for co-drug delivery, *Talanta*, 2021, 221, 121572.
35. Mengjie Cui, Yaxian Ge, Xiao Zhuge, Xin Zhou, Dongmei Xi*, **Shusheng Zhang***, Recent advances in nanopore sensing, *Chinese J. Chem.*, 2021, 39, 2035-2043.

36. Zhongfeng Gao, Rui Liu, Jinhua Wang, Jun Dai, Weihua Huang, Mingjie Liu, Shutao Wang, Fan Xia*, **Shusheng Zhang***, Lei Jiang, Manipulating the hydrophobicity of DNA as a universal strategy for visual biosensing, *Nature Protocols*, 2020, 15: 316-337.
37. Caixia Wang, Bo Wu, Yuting Wu, Xinyue Song, **Shusheng Zhang***, Zhihong Liu*, Camouflaging Nanoparticles with Brain Metastatic Tumor Cell Membranes: A New Strategy to Traverse Blood-brain Barrier for Imaging and Therapy of Brain Tumors, *Adv. Funct. Mater.*, 2020, 30(14): 1909369.
38. Zhen Fang, Liping Liu, Ying Wang, Dongmei Xi*, **Shusheng Zhang***, Unambiguous Discrimination of Multiple Protein Biomarkers by Nanopore Sensing with Double-Stranded DNA-Based Probes, *Anal. Chem.*, 2020, 92, 1730-1737.
39. Yingnan Sun, Xiaodong Chen, Yongxin Zheng, Yuhan Song, Huairong Zhang, **Shusheng Zhang***, Surface-Enhanced Raman Scattering Trace-Detection Platform Based on Continuous-Rolling-Assisted Evaporation on Superhydrophobic Surfaces, *ACS Appl. Nano Mater.*, 2020, 3, 4767-4776
40. Junwei Li, Dandan Yuan, Xiangjiang Zheng, Xinyue Zhang, Xuemei Li*, **Shusheng Zhang***, A triple-combination nanotechnology platform based on multifunctional RNA hydrogel for lung cancer therapy, *Sci. China. Chem.*, 2020, 63, 546-553.
41. Xinyue Song, Huairong Zhang, Tao Yan, Tongtong Hong, **Shusheng Zhang***, Controllable growth and assembling strategies based on nanomaterials for targeted and precise therapy of malignant cancers, *Chinese J. Chem*., 2020, 38, 1489-1496.
42. Yingshu Guo, Xiaofei Zheng, Xiuping Cao, Wenxin Li, Di Wu, **Shusheng Zhang***, Reduced thiol compounds -induced biosensing, bioimaging analysis and targeted delivery, *Chinese J. Chem*., 2020, 38, 1793-1806.
43. Lanlan Chen*, Shuai Xu, Wei Li, Tianbing Ren, Lin Yuan, **Shusheng Zhang***, Xiaobing Zhang*, Tumor-Acidity Activated Surface Charge Conversion of Two-Photon Fluorescent Nanoprobe for Enhanced Cellular Uptake and Targeted Imaging of Intracellular Hydrogen Peroxide, *Chem. Sci.*, 2019, 10, 9351-9357.
44. Xinyue Song, Zihong Yue, Tongtong Hong, Zonghua Wang, **Shusheng Zhang***, Sandwich-structured upconversion nanoprobes coated with a thin silica layer for mitochondria-targeted cooperative photodynamic therapy for solid malignant tumors, *Anal. Chem.*, 2019, 91, 8549-8557.
45. Huairong Zhang, Wanxia Gao, Yong Liu, Yingnan Sun, Yanxialei Jiang, **Shusheng Zhang***, Electrochemiluminescence-Microscopy for microRNA Imaging in Single Cancer Cell Combined with Chemotherapy-Photothermal Therapy, *Anal. Chem.*, 2019, 91, 12581-12586.
46. Xiaoru Zhang, Chao Liu, Yujiao Pei, Weiling Song, **Shusheng Zhang***, Preparation of a novel Raman probe and its application in the detection of Circulating Tumor Cells and exosomes, *ACS Appl. Mater. Interfaces*, 2019, 32, 28671-28680.
47. Zhang Zhen, Zhu Mengting, Chen Zichao, Wang Xiaomeng, Chen Guang*, **Zhang Shusheng***, Coaxial Sensing Bio-amplifier for Ultrasensitive Detections of the Mutated Circulating Tumor DNAs, *Biosens. Bioelectron.*, 2019, 141, 111414.
48. Jing Liu, Fenfen Zhai, Hong Zhou*, Wenrong Yang, **Shusheng Zhang***, Gold Nanoflower-inspired Nanoarchitectonics Enables Target Chemo-Photothermal Therapy of a Tumor with a High Speed Light-to-Heat Conversion, *Adv. Healthc. Mater.*, 2019, 1801300.
49. Lishang Liu, Yao Jiang, Xuemei Li*, **Shusheng Zhang***, Application of quartz crystal microbalance in detection of tumor markers, *Sci. China. Chem.,* 2019, 49, 276-284.
50. Hong Zhou, Jing Liu, Jing-Juan Xu*, **Shusheng Zhang***, Hong-Yuan Chen, Optical Nano-Biosensing Interface via Nucleic Acid Amplification Strategy: Construction and Application, *Chem. Soc. Rev.*, 2018, 47, 1996-2019.
51. Dongmei Xi, Zhi Li, Liping Liu, Shiyun Ai*, **Shusheng Zhang***, Ultrasensitive detection of cancer cells combining enzymatic signal amplification with an aerolysin nanopore, *Anal. Chem.*, 2018, 90, 1029-1034.
52. Yingnan Sun, Wenhua Song, Xiaohan Sun, **Shusheng Zhang***, Inkjet-Printing Patterned Chip on Sticky Superhydrophobic Surface for High-Efficiency Single-Cell Array Trapping and Real-Time Observation of Cellular Apoptosis. *ACS Appl. Mater. Interfaces*, 2018, 10, 31054-31060.
53. Xinyue Song, Zihong Yue, Jiayu Zhang, Zonghua Wang, **Shusheng Zhang***, Multi-color upconversion nanoprobe based on dual luminescence resonance energy transfer assay for

simultaneous detection and bioimaging of intracellular [Ca^{2+}]i and pHi in living cells, *Chem.-Euro. J.*, 2018, 24, 6458- 6463.

54. Mengting Zhu, Zhaomei Sun, Zhen Zhang*, **Shusheng Zhang***, Ultrasensitive SERS detection of highly homologous miRNAs by generating 3D organic-nanoclusters and a functionalized chip with locked nucleic acid probes, *Chem. Commun.*, 2018, 54, 13431-13434.
55. Min Gao, Lanlan Chen, Zhenhua Zhang, Xuping Sun*, **Shusheng Zhang***, Interface engineering of $Ni(OH)_2$-Ni_3N nanoarray heterostructure for alkaline hydrogen evolution reaction, *J. Mater. Chem. A,* 2018, 6, 833-836.
56. X. R. Zhang, Y. Li, F. T. Chen, X. J. Song, **Shusheng Zhang***, Proximity Ligation Detection of Lectin Concanavalin A and Fluorescence Imaging Cancer Cells Using Carbohydrate Functionalized DNA-Silver Nanocluster Probes, *Biosens. Bioelectron.*, 2018, 104: 27-31.
57. Sai Bi, Shuzhen Yue, **Shusheng Zhang***, Hybridization chain reaction: a versatile molecular technology for biosensing, bioimaging and biomedicine, *Chem. Soc. Rev.*, 2017, 46: 4281-4298.
58. Huai-Rong Zhang, Bin-Xiao Li, Zhao-Mei Sun, Hong Zhou*, **Shu-sheng Zhang***, Integration of intracellular telomerase monitoring by electrochemiluminescence and targeted cancer therapy by reactive oxygen species, *Chem. Sci.*, 2017, 8: 8025-8029.
59. Yingshu Guo, Shuang Li, Yujie Wang, **Shusheng Zhang***, Diagnosis–therapy integrative systems based on magnetic RNA nanoflowers for co-drug delivery and targeted therapy, *Anal. Chem.*, 2017, 89: 2267-2274.
60. Zhen Zhang, Yuting Jiao, Mengting Zhu, Wanqing Teng, **Shusheng Zhang***, Nuclear-Shell Biopolymers Initiated by Telomere Elongation for Individual Cancer Cell Imaging and Drug Delivery, *Anal. Chem.*, 2017, 89: 4320-4327.
61. Lishang Liu, Congcong Wu, **Shusheng Zhang***, Ultrasensitive detection of DNA and Ramos cell using In-Situ Selective Crystallization based Quartz Crystal Microbalance, *Anal. Chem.*, 2017, 89: 4309-4313.
62. Xinyue Song, Jiayu Zhang, Zihong Yue, Zonghua Wang, Zhihong Liu*, **Shusheng Zhang***, Dual-activator codoped upconversion nanoprobe with core-multishell structure for in vitro and in vivo detection of hydroxyl radical, *Anal. Chem.*, 2017, 89(20): 11021-11026.
63. Yingshu Guo, Yujie Wang, Shuang Li, Li Niu, Di Wei, **Shusheng Zhang***, DNA-spheres Decorated Magnetic Nanocomposite Based on Terminal Transfer Reaction for Versatile Target Detection and Cellular Targeted Drug Delivery. *Chem. Commun.*, 2017, 53: 4826-4829.
64. Zhen Zhang, Yuanyuan Wang, Ningbo Zhang, **Shusheng Zhang***, Self-assembly of nucleic acid molecular aggregates catalyzed by a triple-helix probe for miRNA detection and single cell imaging, *Chem. Sci.*, 2016, 7, 4184-4189.
65. Xiaoru Zhang, Ruijuan Li, Yuanyuan Chen, **Shusheng Zhang***, Wenshuang Wang, Fuchuan Li*, The Application of DNA Rolling Circle Amplification in Fluorescence Imaging of Cell Surface Glycans Labeled by Metabolic Method, *Chem. Sci.*, 2016, 7, 6182-6189.
66. Hong Zhou, Tongqian Han, Qin Wei*, **Shusheng Zhang***, Efficient Enhancement of Electrochemiluminescence from CdS QDs by Glucose Oxidase-Mimicking Gold Nanoparticles through Catalytic Generation of Coreactant and Energy Transfer for Highly Sensitive Assay of the Methyltransferase Activity, *Anal. Chem.*, 2016, 88, 2976-2983.
67. Dongmei Xi, Jizhen Shang, Enguo Fan, Jinmao You, **Shusheng Zhang***, Hua Wang*, Nanopore-Based Selective Discrimination of MicroRNAs with Single-Nucleotide Difference Using Locked Nucleic Acid-Modified Probes, *Anal. Chem.*, 2016, 88, 10540-10546.
68. Jing Liu, Meirong Cui, Li Niu, Hong Zhou*, **Shusheng Zhang***, Enhanced Peroxidase-like Properties of Graphene-hemin Composites decorated AuNanoflower and Application of Electrochemical Aptamer Biosensor for Detetion of K562 Cells, *Chem.-Euro. J.*, 2016, 22, 18001-18008.
69. Sai Bi, Shuzhen Yue, Weiling Song, **Shusheng Zhang***, TA target-initiated DNA network caged on magnetic particles for amplified chemiluminescence resonance energy transfer imaging of microRNA and targeted drug delivery, *Chem. Commun.*, 2016, 52, 12841-12844.
70. X. R. Zhang, Y. Zhang, F. T. Chen, Y. Li, **S. S. Zhang***, Visual Detection of Single-Nucleotide Polymorphisms and DNA Methyltransferase Based on cation-exchange of CuS nanoparticles and Click Chemistry of Functionalized Gold Nanoparticles, *Chem. Commun.*, 2016, 52, 13261-13264.
71. Hong Zhou, Jing Liu, **Shusheng Zhang***, Quantum dots-based photoelectric conversion for biosensing applications, *Trends Anal. Chem.*, 2015, 67, 56-73.

72. Zhen Zhang, Yuanyuan Wang, Fuwei Zheng, Rui Ren, **Shusheng Zhang***, Ultrasensitive SERS Assayof Lysozyme using a Novel and Unique Four-Way Helical Junction Molecule probe for Signal Amplification, *Chem. Commun.*, 2015, 51, 907-910.
73. Jing Liu, Xiaoyan Xin, Hong Zhou, **Shusheng Zhang***, Human serum protein detection based on cascade signal amplification strategy by DNA molecule machine, *Chem. Commun.*, 2015, 51, 10843-10846.
74. Xiaomeng Wang, Meirong Cui, Hong Zhou*, **Shusheng Zhang***, DNA-Hybrid-Gated Functional Mesoporous Silica for Sensitive DNA Methyltransferase SERS Detection, *Chem. Commun.*, 2015, 51, 13983-19385.
75. Jing Liu, Xiaoyan Xin, Hong Zhou, **Shusheng Zhang***, A Ternary Composite based on Graphene, Hemin and Gold Nanorods with High Catalytic Activity for Detection of Cell Surface Glycan Expression, *Chem.-Euro. J.*, 2015, 21, 1908-1914.
76. Xiaoru Zhang, Jiao Chen, Hongxia Liu, **Shusheng Zhang***, Ultrasensitive quartz crystal microbalance detection of protein based on biocatalytic precipitation and rolling circle amplification, *Biosens. Bioelectron.*, 2015, 65, 341-345.
77. Sujuan Ye, Yaning Mao, Yuanyuan Guo, **Shusheng Zhang***, Enzyme-based signal amplification of surface-enhanced Raman scattering in cancer biomarker detection, *Trends in Anal. Chem.*, 2014, 55, 43-54.
78. Dongmei Xi, Xindong Wang, Shiyun Ai, **Shusheng Zhang***, Detection of cancer cells using triplex DNA molecular beacons based on expression of enhanced green fluorescent protein (eGFP), *Chem. Commun.*, 2014, 50, 9547-9549.
79. Peng He, Lijun Liu, Wenping Qiao, **Shusheng Zhang***, Ultrasensitive Detection of Protein Using Surface Plasmon Resonance and Quartz Crystal Microbalance Sensors by Aptamer-Based Rolling Circle Amplification and Bio-Bar-Coded Nanoparticle Signal Enhancement, *Chem. Commun.*, 2014, 50, 1481-1484.
80. Peng He, Wenping Qiao, Lijun Liu, **Shusheng Zhang***, Highly sensitive surface plasmon resonance sensor for the detection of DNA and cancer cell by target-triggered multiple signal amplification strategy, *Chem. Commun.*, 2014, 50, 10718-10721.
81. Ying Li, Xindi Qi, Chengcun Lei, Qifeng Yue, **Shusheng Zhang***, Simultaneous SERS detection and imaging of two biomarkers on cancer cell surface by self-assembly of branched DNA-gold nanoaggregates, *Chem. Commun.*, 2014, 50, 9907-9909.
82. Hong Zhou, Yiying Yang, Chunxiang Li, Bing Yu, **Shusheng Zhang***, Enhanced Iridium Complex Electrochemiluminescence Cytosensing and Dynamic Evaluation of Cell-Surface Carbohydrate Expression, *Chem.-Euro. J.*, 2014, 20, 14736-14743.
83. Ying Li, Yan Zeng, Yaning Mao, Chengcun Lei, **Shusheng Zhang***, Proximity-dependent isothermal cycle amplification for small-molecule detection based on surface enhanced Raman scattering, *Biosens. Bioelectron.*, 2014, 51, 304-309.
84. Weiling Song, Zheng Zhu, Yaning Mao, **Shusheng Zhang***, A sensitive QCM assay of ATP via DNAzyme-activated and aptamer-based target-triggering circular amplification, *Biosens. Bioelectron.*, 2014, 53: 288-294.
85. Weiling Song, Qiao Zhang, Xuxu Xie, **Shusheng Zhang***, Fluorescence Aptameric Sensor for Strand Displacement Amplification Detection of adenosine triphosphate, *Biosens. Bioelectron.*, 2014, 61: 51-56.
86. Xiaoru Zhang, Mingshuai Liu, Hongxia Liu, **Shusheng Zhang***, Nontoxic Ag_2S Quantum Dots for Photoelectrochemical Detection Glucose and Cancer Cells, *Biosens. Bioelectron.*, 2014, 56(15): 307-312.
87. Yingshu Guo, Xuemei Li, Sujuan Ye, **Shusheng Zhang***, Modern optical techniques: a bright scenery for cell analysis, *Trends in Anal. Chem.*, 2013, 42: 168-185.
88. Sai Bi, Bin Ji, Zhipeng Zhang, **Shusheng Zhang***, Chemiluminescence imaging array for the detection of cancer cells by aptamer recognition and bio-bar-code nanoprobe-based rolling circle amplification, *Chem. Commun.*, 2013, 49, 3452-3454.
89. Sujuan Ye, Yuanyuan Guo, Jie Xiao, **Shusheng Zhang***, A sensitive SERS assay of L-histidine via DNAzyme-activated target recycling cascade amplification strategy, *Chem. Commun.*, 2013, 49, 3643-3645.

90. Peng He, Yan Zhang, Lijun Liu, Wenping Qiao, **Shusheng Zhang***, Ultrasensitive SERS Detection of Lysozyme by Target-Triggering Multiple Cycle Amplification Strategy based on Gold Substrate, *Chem.-Euro. J.*, 2013, 19, 7452-7460.
91. Sujuan Ye, Jie Xiao, Yuanyuan Guo, **Shusheng Zhang***, Aptamer-Based SERS Assay Using Primer Self-generation for ATP and Lysozyme, *Chem.-Euro. J.*, 2013, 19, 8111-8116.
92. Rui Ren, Haiyan Wang, Mingyin Wang, Zhaotao Yu, **Shusheng Zhang***, Direct Visualization of Amplification in a DNA Molecular Machine with Total Internal Reflection Fluorescence Microscopy, *Frontiers in Anal. Chem.*, 2013, 1, 1-6.
93. Hua Zhong, Rumin Zhang, Hui Zhang, **Shusheng Zhang***, Modular Design of Ultrahigh-Intensity Nanoparticle Probe for Cancer Cell Imaging and Rapid Visual Detection of Nucleic Acid, *Chem. Commun.*, 2012, 48, 6277-6279.
94. Sujuan Ye, Yunxu Yang, Jie Xiao, **Shusheng Zhang***, Surface-enhanced Raman Scattering Assay Combined with Autonomous DNA Machine Isothermal Amplification for Detection of Specific DNA and Ramos Cell, *Chem. Commun.*, 2012, 48, 8535-8537.
95. Ying Li, Chengcun Lei, Yan Zeng, Xiaoting Ji, **Shusheng Zhang***, Sensitive SERS Detection of DNA and Lysozyme Based on Polymerase Assisted Cross Strand-Displacement Amplification, *Chem. Commun.*, 2012, 48, 10892-10894.
96. Rui Ren, Zhaotao Yu, Yuanming Zou, **Shusheng Zhang***, Enhancing the Sensitivity of Aptameric Detection of Lysozyme with a "Feed-forward" Reaction Network of Cycling DNA-Related Reactions, *Chem.-Euro. J.*, 2012, 18, 14201-14209.
97. Xiaoru Zhang, Yunpeng Xu, Xia Jin, Sujuan Ye, **Shusheng Zhang***, Jiehua Lin, Novel graphene-QD nanocomposite Based Signal-on Photoelectrochemical Biosensor Amplified by Dual-quenched Effect of Bipyridinium Relay and AuNPs, *Chem.-Euro. J.*, 2012, 18, 16411-16418.
98. Guifen Jie, Lei Wang, Jinxin Yuan, **Shusheng Zhang***, Versatile Electrochemiluminescence Assays for Cancer Cells Based on Dendrimer/CdSe-ZnS-Quantum Dot Nanoclusters, *Anal. Chem.*, 2011, 83, 3873-3880.
99. Yingshu Guo, Xueping Jia, **Shusheng Zhang***, DNA cycle amplification device on magnetic microbeads for determination of thrombin based on graphene oxide enhancing signal-on electrochemiluminescence, *Chem. Commun.*, 2011, 47, 725-727.
100. Yingshu Guo, Yuanshun Sun, **Shusheng Zhang***, Electrochemiluminescence induced photoelectrochemistry for sensing of the DNA based on DNA-linked CdS NPs superstructure with intercalator molecules, *Chem. Commun.*, 2011, 47, 1595-1597.
101. Chunxiang Li, Juan Lin, Yingshu Guo, **Shusheng Zhang***, An Electrochemiluminescent Reagent of Cyclometalated Iridium Complex-Based DNA Biosensor and its Application in Cancer Cell Detection, *Chem. Commun.*, 2011, 47 (15): 4442-4444.
102. Xiaoru Zhang, Shuguo Li, Xia Jin, **Shusheng Zhang***, New Photoelectrochemical Aptasensor for the Thrombin Detection Based on Functionalized Graphene and CdSe Nanoparticles Multilayers, *Chem. Commun.*, 2011, 47, 4929-4931.
103. Guifen Jie, Lei Wang, **Shusheng Zhang***, Magnetic Electrochemiluminescent Hybrid Nanostructures of Fe3O4/CdSe@CdS-Quantum Dots/ Polyelectrolytes for Highly Efficient Immunosensing of Cancer Biomarker Protein, *Chem.-Euro. J.*, 2011, 17, 641-648.
104. Hui Zhang, Congcong Fang, **Shusheng Zhang***, Ultrasensitive Electrochemical Analysis of Two-component Analytes by An Autonomous DNA Machine Worked in Two-cycle Modes, *Chem.-Euro. J.*, 2011, 17, 7531-7537.
105. Hua Zhong, Qinglan Zhang, **Shusheng Zhang***, High-Intensity Fluorescence Imaging and Sensitive Electrochemical Detection of Cancer Cells Using an Extracellular Supramolecular Reticular DNA-Quantum Dot Sheath, *Chem.-Euro. J.*, 2011, 17, 8388-8394.
106. Sai Bi, Yameng Yan, Shuangyuan Hao, **Shusheng Zhang***, Colorimetric Logic Gates Based on Supramolecular Constructs of DNAzymes Responding to Ion Input Signals, *Angew. Chem. Int. Ed.*, 2010, 49, 4438-4442.
107. Sai Bi, Hong Zhou, **Shusheng Zhang***, A novel synergistic enhanced chemiluminescence achieved by multiplex nanoprobe for biological applications combined with dual-amplification of magnetic nanoparticles, *Chem. Sci.*, 2010, 1, 681-687.
108. Sai Bi, Li Li, **Shusheng Zhang***, Triggered Polycatenated DNA Scaffolds for DNA Sensors and Aptasensors by a Combination of Rolling Circle Amplification and DNAzyme Amplification, *Anal. Chem.*, 2010, 82, 9447-9454.

109. Caifeng Ding, Xiangling Li, Ying Ge, **Shusheng Zhang***, Ultrasensitive Fluorescence Detection of Telomerase Activity in Cancer Cells Based on Isothermal Circular Strand-displacement Polymerization Reaction, *Anal. Chem.*, 2010, 82, 2850-2855.
110. Caifeng Ding, Ying Ge, **Shusheng Zhang***, Electrochemical and Electrochemiluminescence Determination of Cancer Cells Based on Aptamers and Magnetic Beads, *Chem.-Euro. J.*, 2010, 16, 10707-10714.
111. Hui Zhang, Congcong Fang, **Shusheng Zhang***, Electrochemical Determination of Adenosine Triphosphate in Cancer Cells Amplified with Autonomous Bio-bar-code DNA Machine, *Chem.-Euro. J.*, 2010, 16, 12434-12439.
112. Xue-mei Li, Jin-ming Liu, **Shusheng Zhang***, Electrochemical Biosensor for Simultaneous Analysis of Two Analytes Based on a Dual-Aptamer DNA Sequence, *Chem. Commun.*, 2010, 46, 595-597.
113. Guifen Jie, Ping Liu, **Shusheng Zhang***, Highly Enhanced Electrochemiluminescence of Novel Gold/Silica/CdSe-CdS Nanostructures for Ultrasensitive Immunoassay of Protein Tumor Marker, *Chem. Commun.*, 2010, 46, 1323-1325.
114. Shuyan Niu, Yu Jiang, **Shusheng Zhang***, Fluorescence Detection for DNA Using Hybridization Chain Reaction with Enzyme-amplification, *Chem. Commun.*, 2010, 46, 3089-3091.
115. Sai Bi, Jilei Zhang, **Shusheng Zhang***, Ultrasensitive and Selective DNA Detection Based on Nicking Endonuclease Assisted Signal Amplification and Its Application in Cancer Cell Detection, *Chem. Commun.*, 2010, 46, 5509-5511.
116. Rui Ren, Cuicui Leng, **Shusheng Zhang***, A Cell sensor based on aptamer recognition and electrode-based circular strand-replacement DNA polymerization, *Chem. Commun.*, 2010, 46, 5758-5760.
117. Sai Bi, Shuangyuan Hao, Li Li, **Shusheng Zhang***, Bio-Bar-Code Dendrimer-like DNA as Signal Amplifier for Cancerous Cells Assay Using Ruthenium Nanoparticle-Based Ultrasensitive Chemiluminescence Detection, *Chem. Commun.*, 2010, 46, 6093-6095.
118. Caifeng Ding, Hui Li, Xiangling Li, **Shusheng Zhang***, A new strategy of photoelectrochemical analysis with light source free based on isoluminol labelled chemiluminescence probe, *Chem. Commun.*, 2010, 46(42): 7990-7992.
119. Xiaoru Zhang, Yanqing Zhao, Shuguo Li, **Shusheng Zhang***, Photoelectrochemical Biosensor for Detection of Adenosine Triphosphate in the Extracts of Cancer Cells, *Chem. Commun.*, 2010, 46, 9173-9175.
120. Caifeng Ding, Zhenfeng Wang, Hua Zhong, **Shu-sheng Zhang***, Ultrasensitive chemiluminescence quantification of single-nucleotide polymorphisms by using monobase-modified Au and CuS nanoparticles, *Biosens. Bioelectron.*, 2010, 25, 1082-1087.
121. Xiaoru Zhang, Ying Li, Haoran Su, **Shusheng Zhang***, Highly Sensitive and Selective Detection of Hg^{2+} Using Mismatched DNA and a Molecular Light Switch Complex in Aqueous Solution, *Biosens. Bioelectron.*, 2010, 25, 1338-1343.
122. Rui Ren, Cuicui Leng, **Shusheng Zhang***, A Chronocoulometric DNA Sensor Based on Screen-printed Electrode Doped with Ionic Liquid and Polyaniline nanotubes, *Biosens. Bioelectron.*, 2010, 25, 2089-2094.
123. **Shusheng Zhang***, Ya-meng Yan, Sai Bi*, Design of Molecular Beacon as Signaling Probes for ATP Detection in Cancer Cells Based on Chemiluminescence Resonance Energy Transfer, *Anal. Chem.*, 2009, 81, 8695-8701.
124. Sai Bi, Yameng Yan, Xiaoyan Yang, **Shusheng Zhang***, Gold Nanolabels for New Enhanced Chemiluminescence Immunoassay of Alpha-fetoprotein Based on Magnetic Beads, *Chem.-Euro. J.*, 2009, 15, 4704-4709.
125. Sai Bi, Hong Zhou, **Shusheng Zhang***, Ultrasensitive Flow Injection Chemiluminescence Detection of DNA Hybridization Based on Bio-Bar-Code Functionalized Magnetic Nanoparticle Label, *Chem. Commun.*, 2009, 37, 5567-5569.
126. Xiaoru Zhang, Huanran Zhou, Caifeng Ding, **Shusheng Zhang***, A Dicopper Complex Chemiluminescence Probe for the Determination of Thiols in Murine P388 Lymphocytic Leukemia Cell, *Chem. Commun.*, 2009, 37, 5624-5626.
127. Hua Zhong, Xi Lei, Xu Hun, **Shu-sheng Zhang***, Design of One-to-one Recognition DNA Probe Based on Triple Au Nanoparticles Bio Bar Codes and its Application in the Electrochemical DNA Biosensor, *Chem. Commun.*, 2009, 45, 6958-6960.

128. Xiaoyan Yang, Yingshu Guo, Sai Bi, **Shusheng Zhang***, Ultrasensitive Enhanced Chemiluminescence Determination of α-fetoprotein Amplified by Double-Codified Gold Nanoparticles labels, *Biosens. Bioelectron.*, 2009, 24, 2707-2711.
129. Caifeng Ding, Qian Zhang, **Shusheng Zhang***, An Electrochemical Immunoassay for Protein based on Bio Bar Code Method, *Biosensor Bioelectron.*, 2009, 24, 2434-2440.
130. Xiaoru Zhang, Haoran Su, Sai Bi, Shuguo Li, **Shu-sheng Zhang***, DNA-Based Amplified Electrical Bio-Barcode Assay for One-Pot Detection of Two DNA Targets, *Biosens. Bioelectron.*, 2009, 24, 2730-2734.
131. Shuyan Niu, Quanyi Li, Rui Ren, **Shusheng Zhang***, Enzyme-Amplified Fluorescence Detection of DNA based on on Etched Optical Fibers, *Biosens. Bioelectron.*, 2009, 24, 2943-2946.
132. Sai Bi, Hong Zhou, **Shusheng Zhang***, Multilayers Enzyme-Coated Carbon Nanotubes as Biolabel for Ultrasensitive Chemiluminescence Immunoassay of Cancer Biomarker, *Biosens. Bioelectron.*, SHAPE * MERGEFORMAT 2009, 24, 2961-2966.
133. Kongcheng Hu, Ping Liu, Sujuan Ye, **Shusheng Zhang***, Ultrasensitive Electrochemical Detection of DNA Based on PbS Nanoparticle Tags and Nanoporous Gold Electrode, *Biosens. Bioelectron.*, 2009, 24, 3113-3119.
134. Guangjiu Li, Xiaolin Li, Jun Wan, **Shusheng Zhang***, Dendrimers-based DNA Biosensors for Highly Sensitive Electrochemical Detection of DNA Hybridization using Reporter Probe DNA Modified with Au Nanoparticles, *Biosens. Bioelectron.*, 2009, 24, 3281-3287.
135. Xiaoru Zhang, Baoping Qi, Ying Li, **Shusheng Zhang***, Amplified electrochemical aptasensor for thrombin based on bio-barcode method, *Biosens. Bioelectron.*, 2009, 25, 259-262.
136. Caifeng Ding, Qian Zhang, Jinming Lin*, **Shusheng Zhang***, Electrochemical Detection of DNA Hybridization Based on Bio-bar Code Method, *Biosens. Bioelectron.*, SHAPE * MERGEFORMAT 2009, 24, 3140-3143.
137. Feng Li*, Zhen Wang, Wei Chen, **Shusheng Zhang***, A simple strategy for one-step construction of bienzyme biosensor by in-situ formation of biocomposite film through electrodeposition, *Biosens. Bioelectron.*, 2009, 24, 3030-3035.
138. Feng Li*, Wei Chen, Pingjun Dong, **Shusheng Zhang***, A simple strategy of probe DNA immobilization by diazotization-coupling on self-assembled 4-aminothiophenol for DNA electrochemical biosensor, *Biosens. Bioelectron.*, 2009, 24, 2160-2164.
139. Wei Wang, Lin Li, Shufeng Liu, Cuiping Ma, **Shusheng Zhang***, Determination of physiological thiols by electrochemical detection with piazselenole and its application in rat breast cancer cells 4T-1, *J. Am. Chem. Soc.*, 2008, 130, 10846-10847.
140. Xuemei Li, Xiaoyan Yang, **Shusheng Zhang***, Electrochemical enzyme immunoassay using model labels, *Trends in Anal. Chem.*, 2008, 27, 543-553.
141. **Shusheng Zhang***, Hua Zhong, Cai-feng Ding*, Ultrasensitive Flow Injection Chemiluminescence Detection of DNA Hybridization Using signal DNA probe modified with NanoAu and NanoCuS Tags, *Anal. Chem.*, 2008, 80, 7206-7212.
142. Kongcheng Hu, Dongxiao Lan, Xuemei Li, **Shusheng Zhang***, Chronocoulometric Detection of DNA Hybridization Using reporter DNA Probe Modified with Au Nanoparticles Based on porous gold leaf electrode, *Anal. Chem.*, 2008, 80, 9124-9130.
143. **Shusheng Zhang***, Jian-ping Xia, Xue-Mei Li*, Electrochemical Biosensor for Detection of Adenosine Based on Structure-Switching Aptamer and Amplification with Reporter Probe DNA Modified Au Nanoparticles, *Anal. Chem.*, 2008, 80, 8382-8388.
144. Cai-feng Ding, Hua Zhong, **Shusheng Zhang***, Ultrasensitive Flow Injection Chemiluminescence Detection of DNA Hybridization Using NanoCuS Tags, *Biosens. Bioelectron.*, 2008, 23, 1314-1318.
145. Feng Li, Wei Chen, **Shusheng Zhang***, Development of DNA electrochemical biosensor based on covalent immobilization of probe DNA by direct coupling of sol-gel and self-assembly technologies, *Biosens. Bioelectron.*, 2008, 24, 781-786.
146. Jiehua Lin, Hui Zhang, S**husheng Zhang***, Determination of glucose based on immobilized gold nanoparticle enhanced chemiluminescence double enzyme sensor, *Sci. China. Chem.,* 2008, 38, 1011-1017.

PATENT:

No.	Project Title	Patent No.	Country	Date
1	A method for acquisition of single cell arrays	ZL202011190716.4	China	2022.04.08
2	The invention relates to targeting core-shell structure drug-loaded nanoparticles and a preparation method thereof	ZL202011300962.0	China	2022.03.29
3	The invention relates to peptide nanoparticles capable of lysosome escape and preparation method and application thereof	ZL202010201907.X	China	2022.03.08
4	Core shell structure-based nanoparticles for targeted drug-delivery and preparation method thereof	2021/09158	South Africa	2022.01.20
5	The invention relates to a tumor targeting compound nano drug carrier, drug, preparation method and application	ZL202010059033.9	China	2021.11.30
6	Preparation and use of nanoparticle- doped RNA hydrogel targeting to triple negative breast cancer	US11155830B2	U.S.A.	2021.10.26
7	Preparation method of RNA triple helix hydrogel for targeted therapy of triple negative breast cancer	ZL201910346420.8	China	2021.08.17
8	The invention discloses RNA nano-hydrogel for targeted therapy of lung cancer and preparation method and application thereof	ZL201810559190.9	China	2021.06.25
9	Detection methods and probes for miRNA and/or target molecules with aptamers	ZL201710024277.1	China	2021.02.09
10	The invention relates to functionalized gold nanoparticles and a preparation method thereof, a preparation method of gold nanoparticles dimer and its application	ZL201910026429.0	China	2020.11.06
11	The invention relates to a nanocomposite probe, composition and fluorescence quantification kit for high sensitivity fluorescence quantification detection of tumor markers in serum	ZL201810246911.0	China	2020.09.01
12	The invention relates to a gene nanoprobe for targeted lung cancer therapy and the preparation method and application thereof	ZL201810559188.1	China	2020.07.28
13	The invention relates to an aptamer and luminol-gold nanoparticle functionalized RNA membrane, preparation method and application thereof	ZL201711340992.2	China	2020.06.12
14	The invention relates to a multifunctional magnetic DNA nanosphere and its preparation method and application	ZL201710116597.X	China	2019.07.02
15	The invention relates to a prostate-specific antigen detection reagent and kit	ZL201710622264.4	China	2019.01.15
16	A kit that detects micrornas, a cancer marker	ZL201410753668.3	China	2018.06.26
17	Construction of high throughput electrochemiluminescence detection method for early tumor	ZL201410744007.4	China	2017.11.14
18	Detection of MCF tumor markers based on biosensor for	ZL201410336488.5	China	2017.09.19

	fluorescence labeling			
19	A magnetic immunoprobe based on luminol functionalization for the detection of alpha-fetoprotein	ZL201510058853.5	China	2017.05.17
20	Detection of mercaptoacetic acid by electrochemical immunosensor based on nanoporous gold electrode	ZL201410008134.8	China	2017.02.08
21	Synthesis of a novel artificial enzyme and construction of a method for glycosylation detection	ZL201410744292.X	China	2016.04.27
22	A method for detection of shellfish toxin in diarrhea	ZL201010187786.4	China	2014.06.04
23	A method for detecting neurotoxic shellfish	ZL201010187814.2	China	2014.06.04
24	Photoelectrochemical sensor prepared by layer-by-layer assembly of functionalized graphene and nanoparticles	ZL201110021525.X	China	2013.10.09
25	Detection of amnestic shellfish toxin by capillary electrophoresis and electrochemical enzyme-linked immunoassay	ZL201010280466.3	China	2013.07.17
26	Polyacrylamide polyurethane/urea and the preparation method thereof	ZL200710181744.8	China	2012.12.12
27	Xylose thiourea heterocyclic compounds and their synthesis methods and antitumor applications	ZL200810001709.8	China	2012.06.13
28	Galactosyl thiourea heterocyclic compounds, synthesis methods and antitumor applications	ZL200810001708.3	China	2011.07.27
29	Glucosylthiourea heterocyclic compounds and their synthesis methods and application in antitumor	ZL200810001711.5	China	2011.01.19
30	Lactose - based thiourea heterocyclic compounds and their synthesis methods and antitumor applications	ZL200810001710.0	China	2010.12.22
31	The invention relates to a silica gel loaded porous chitosan carrier for enzyme immobilization	ZL200510045268.8	China	2009.01.14
32	Liquid crystal compound -4'-n-butoxy-4-azobenzene carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139012.8	China	2008.09.10
33	Liquid crystal compound-4'-n-octyloxy-4-azobenzene carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139013.2	China	2008.09.10
34	Liquid crystal compound-4'-n-heptoxy-4-azobenzene carboxylic acid - 3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139015.1	China	2008.09.10
35	Liquid crystal compound-4'-n-pentanoxy-4-azobenzene carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139016.6	China	2008.09.10
36	Liquid crystal compound-4'-n-hexoxy-4-azobenzene carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139017.0	China	2008.09.10
37	Liquid crystal compound -4 '- n-decoxy4-azobenzene carboxylic acid-3-fluoro-46 cyanophenyl ester and preparation method thereof	ZL200610139010.9	China	2008.08.20
38	Liquid crystal compound -4'-cyclohexanoxy-4-biphenyl carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139018.5	China	2008.08.20
39	Liquid crystal compound -4'- allyl-4- azobenzene carboxylic acid-3-fluoro-4-cyanophenyl ester and preparation method thereof	ZL200610139011.3	China	2008.08.13
40	Liquid crystal compound-4'-cyclopenoxy-4-biphenyl	ZL200610139014.7	China	2008.08.13

	carboxylic acid-3-fluoro-4-cyano-phenyl ester and preparation method thereof			
41	The invention relates to a triazole organic compound containing benzotriazole, preparation method and application	ZL200510104480.7	China	2008.05.14
42	A silica gel supported surface macroporous chitin matrix for lysozyme affinity chromatography	ZL200610042153.8	China	2008.05.14
43	Preparation and application of silica gel supported dye affinity matrix	ZL200610042151.9	China	2008.02.27
44	A novel liquid crystal compound-4'-(2-methylpropyloxy-1)-4-biphenyl carboxylic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200610042157.6	China	2008.02.13
45	New type of liquid crystal compounds-3-(4-(c-2-1-ene oxygen radicals)-phenyl] acrylic acid-2-fluoro-4-hydroxy phenyl acrylic ester and its preparation method	ZL200610042155.7	China	2008.01.23
46	A novel liquid crystal compound, 3-[4-(2-methylpropyloxy-1) phenyl] acrylic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200610042159.5	China	2008.01.23
47	Preparation and properties of silica gel supported selective adsorption materials based on organic-inorganic hybrid of copper ion imprinted chitosan	ZL200610042152.3	China	2007.11.21
48	A novel silica gel supported cross-linked chitosan heavy metal ion adsorbent	ZL200510045500.8	China	2007.11.07
49	A novel liquid crystal compound, 3-(4-n-decoxyphenyl) acrylic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200610042154.2	China	2007.09.26
50	A novel liquid crystal compound, 4'-(2-phenoxy ethoxy-1)-4-biphenyl carboxylic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200610042158.0	China	2007.09.26
51	A novel liquid crystal compound, p-butoxycinnamate-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043716.0	China	2007.08.22
52	A novel liquid crystal compound-p-methoxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043711.8	China	2007.05.16
53	A novel liquid crystal compound, p-isopentloxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043712.2	China	2007.05.16
54	A novel liquid crystal compound-p-hexoxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043713.7	China	2007.05.16
55	A novel liquid crystal compound, p-heptanoxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043714.1	China	2007.05.16
56	A novel liquid crystal compound, p-n-propoxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043715.6	China	2007.05.16
57	A novel liquid crystal compound, p-n- pentoxy cinnamic	ZL200510043717.5	China	2007.05.16

	acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof			
58	A novel liquid crystal compound, p-octyloxy cinnamic acid-2-fluoro-4-hydroxybenzonitrile ester and a preparation method thereof	ZL200510043718.X	China	2007.05.16