

2026 年度中国分析测试协会分析测试科学奖公示材料

一、项目名称

宽光谱单体荧光动态变色传感新方法 & 多场景检测应用

二、主要完成人

杨亮¹, 林丹¹, 蒋若瑄¹, 宋昕², 杨帆¹, 潘磊¹, 张启鹏¹, 蒋长龙¹

三、主要完成单位

1、中国科学院合肥物质科学研究院, 2、安徽省合肥市公安局刑事侦查支队

四、代表性专著、论文、专利、标准、其他知识产权

序号	名称
一、专著	
1-1	无
二、论文	
2-1	Xuelian Zhang, Jie Cao*, Yingying Liu, Fei Lin, Min Lou, Ran Xie, Changlong Jiang*. A ternary reaction triggering fluorescence/colorimetric dual-mode signals for visual detection of ammonium nitrogen in environmental samples. Journal of Hazardous Materials . 2026, 511, 142204. (IF=11.300)
2-2	Anqi Liu, Mengmeng Li, Kongwen Zhu, Ruoxuan Jiang, Xin Song, Dan Lin*, Changlong Jiang*. Rapid Visual Detection of Phoxim Via Competitive Binding in a Flavonoid-Based Fluorescent Dye@Whey Protein Sensor. Analytical Chemistry . 2026, 98, 21, 15773-15782 (IF=6.700)
2-3	Wei Jia, Xiaohui Kang, Zhenzhen Xie, Bo Liang*, Fan Yang*, Changlong Jiang*. Aptamer-Mediated Energy Acceptor Sensitization Strategy Driving Reverse Dual-Signal Change for Constructing High-Contrast Upconversion Nanoprobes. Analytical Chemistry . 2026, 98, 10, 7693-7701. (IF=6.700)
2-4	Lei Pan, Qipeng Zhang, Fan Yang*, Dan Lin, Changlong Jiang*. Metal organic frameworks-based sensor for visual monitoring of cortisol in human fluids. Sensors and Actuators B-Chemical . 2026, 454, 139605. (IF=7.700)
2-5	Xiaorong Guan*, Zheng Wang, Yu Bai, Dingzhe Li, Changlong Jiang, Youyuan Liu. An Index System and Quantitative Evaluation Method for Exoskeleton Efficacy Assessment Based on Multi-Source Signal Fusion. Applied

	Sciences-Basel . 2026, 16, 3, 1573. (IF=2.500)
2-6	Changlong Jiang, Yang Xiao*, Jinghong Zheng, Haohong Kuang, Cunlin Wu, Mingyang Zhang, Zhiguo Cao, Min Du, Joey Tianyi Zhou, Junsong Yuan. 3D Hand Pose Estimation via Articulated Anchor-to-Joint 3D Local Regressors. IEEE Transactions on Pattern Analysis and Machine Intelligence . 2026, 48, 1, 982-998. (IF=18.600)
2-7	Dan Lin, Anqi Liu, Lei Pan, Fan Yang, Liang Yang*, Changlong Jiang*. Aggregation-induced fluorescence switching of melamine-tailored carbon dots: Dual-recognition strategy coupled with deep learning for sensitive salbutamol assay. Microchemical Journal . 2026, 220, 116328. (IF=5.100)
2-8	Ruoxuan Jiang, Anqi Liu, Qipeng Zhang, Lei Pan, Shudong Zhang*, Dan Lin*, Liang Yang, Changlong Jiang*. Cascade-amplified 2D ultrathin hexagonal Cu-doped LDO nanozyme for multiplexed wearable monitoring of sweat metabolites. Biosensors and Bioelectronics . 2026, 309, 118826. (IF=10.500)
2-9	Abdulkareem Qasem, Xingzhen Li, Fan Yang*, Changlong Jiang*. Thermally stable and efficient upconversion luminescent titanate perovskites based on dual-cation substitution for lighting and anti-counterfeiting. Journal of Alloys and Compounds . 2025, 1048, 185361. (IF=6.300)
2-10	Dan Lin, Anqi Liu, Lei Pan, Liang Yang, Changlong Jiang*. Reversible flexible functional metal-organic frameworks sensor with artificial intelligence data analysis for real-time trace water monitor. Chemical Engineering Journal . 2025, 526, 170841. (IF=13.200)
2-11	Zhenzhen Xie, Wei Jia, Xingzhen Li, Lei Pan*, Shihao Xu*, Changlong Jiang*. Fluorescent biosensor based on aptamer-cDNA hybridization for Cd ²⁺ detection and molecular mechanism investigation. Microchemical Journal . 2025, 218, 115614. (IF=5.100)
2-12	Changlong Jiang, Yitong Yue, Yiming Wang, Bing Zhou*, Gaojie Han, Ming Huang*, Yuezhan Feng*, Chuntai Liu. Electro-magnetic dual-gradient MXene@Ni/Aramid nanofiber film for low-reflection electromagnetic interference shielding. Surfaces and Interfaces . 2025, 75, 107756. (IF=6.300)
2-13	Xiaohui Kang, Qipeng Zhang, Fan Yang, Xingzhen Li, Wei Jia, Lei Pan, Liang Yang*, Changlong Jiang*. Machine Learning-Coupled Upconversion Nanoprobe-Based Immunochromatographic Device for Blood Drug Dynamics Monitoring. Advanced Functional Materials . 2026, 36, 11, e18138. (IF=19.000)

2-14	Jiawei Zhu, Xiaohui Kang, Jianjun Shen, Lanpeng Zhang, Liang Yang*, Changlong Jiang*. Harnessing Energy Enrichment Strategy for Designing Innovative Sandwich-Structured Upconversion Nanoprobes. Analytical Chemistry . 2025, 97, 36, 19489-19497. (IF=6.700)
2-15	Zhuliang Chen, Ruibing Feng, Qiuzhong Zhou, Xinya Zhang, Yu Fan, Dafeng Fang, Rongbo Zheng, Wei Zhang, Zhaoyang Lu, Jincan Chen, Qing-Wen Zhang, Changlong Jiang*, Peng Li*, Hua Yu*, Guodong Li*. Biomaterials and biosensing technologies in the detection and removal of pesticide residues: Current trends and future prospects. Coordination Chemistry Reviews . 2026, 547, 217110. (IF=23.500)
2-16	Zheng Wang, Xiaorong Guan*, Dingzhe Li, Changlong Jiang, Yu Bai, Dongrui Yang, Long He. Study on Muscle Fatigue Classification for Manual Lifting by Fusing sEMG and MMG Signals. Sensors . 2025, 25, 16, 5023. (IF=3.500)
2-17	Lei Pan, Fan Yang, Xiaohui Kang, Qipeng Zhang, Changlong Jiang*. Rare Earth Ion-Induced Functionalized Fluorescent MOF Hydrogel Patches for Monitoring Lysozyme in Tears. Analytical Chemistry . 2025, 97, 26, 13799-13808. (IF=6.700)
2-18	Anqi Liu, Qipeng Zhang, Lei Pan, Fan Yang, Dan Lin*, Changlong Jiang*. Supramolecular Fluorescence Probe for Rapid Visual Detection of Pyrethroid and Composite Aerogel as a Pyrethroid Vapor Sensor. Analytical Chemistry . 2025, 97, 25, 13672-13680. (IF=6.700)
2-19	Kangran Li, Wenshuai Guo, Hao Yu, Caidie Chang, Jiawei Zhu*, Kai Dai*, Changlong Jiang*. A versatile strategy for constructing background fluorescence-free and dual-mode hydrogel nanosensor for sensitive detection of amikacin. Talanta . 2026, 296, 128410. (IF=6.100)
2-20	Qipeng Zhang, Xiaohui Kang, Fan Yang, Liang Yang*, Changlong Jiang*. Aqueous/Chemical-Resistant Organic Room Temperature Phosphorescence Materials From Siloxane Network Reinforcement. Advanced Optical Materials . 2025, 13, 21. (IF=7.200)
2-21	Hao Yu, Wenshuai Guo, Kangran Li, Caidie Chang, Jiawei Zhu*, Kai Dai*, Changlong Jiang*. Background-free and dual-signal output intelligent hydrogel nanosensor for sensitive detection of catalase in serum. Chemical Engineering Journal . 2025, 512, 162593. (IF=13.200)
2-22	Ruijie Tang, Lingfei Li*, Yaowei Zhu, Minghui Zhan, Jun Zhao*, Changlong Jiang, Bianhua Liu*. Ratiometric fluorescent sensor for sensitive visualization

	of full-spectrum fluoroquinolone antibiotic residues in the environment. Microchemical Journal . 2025, 212, 113260. (IF=5.100)
2-23	Ruoxuan Jiang, Lei Pan, Fan Yang, Shudong Zhang, Dan Lin*, Changlong Jiang*. MOF-on-MOF multi-enzyme cascade sensor for visual monitoring of uric acid in body fluids. Talanta . 2026, 299, 129115. (IF=6.100)
2-24	Wenshuai Guo, Kangran Li, Hao Yu, Caidie Chang, Jiawei Zhu*, Kai Dai*, Changlong Jiang*. The Reversible and Background-Free Hydrogel-Sensing Platform for Dual-Mode Detection of Acetone in Exhaled Breath. Analytical Chemistry . 2025, 97, 7, 4084-4091. (IF=6.700)
2-25	Yaowei Zhu, Ruijie Tang, Jun Zhao, Changlong Jiang, Lingfei Li*, Bianhua Liu*. Design and application of metal-organic framework based chemo-fluorescent sensor for selective sensing of the full spectrum of tetracyclines in complex samples. Chemical Engineering Journal . 2025, 507, 160281. (IF=13.200)
2-26	Yujie Guo, Lingfei Li, Maofeng Zhang*, Shihao Xu*, Changlong Jiang*. A Self-Assembly MOF-on-MOF Heterostructure-Driven Fluorescence Sensor for Aerogel-Based Visualization Detection of Flavomycin. Small . 2025, 21, 11, 2410911. (IF=12.100)
2-27	Lanpeng Zhang, Xiaohui Kang, Fan Yang, Wei Jia, Liang Yang*, Changlong Jiang*. Zinc Doping-Induced Lattice Growth Regulation for Enhanced Upconversion Emission in Serum Bilirubin Detection. Analytical Chemistry . 2025, 97, 6, 3515-3524. (IF=6.700)
2-28	Wenshuai Guo, Kangran Li, Hao Yu, Caidie Chang, Jiawei Zhu*, Qiang Li*, Changlong Jiang*. Background-free luminescent and chromatic assay for strong visual detection of creatinine. Talanta . 2025, 287, 127631. (IF=6.100)
2-29	Hongcheng Gao, Zhenzhen Xie, Shihao Xu*, Changlong Jiang*. MUA-modified Au nanocluster-driven fluorescence sensor for chromatographic test strips-based visual detection of patulin. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy . 2025, 330, 125736. (IF=4.600)
2-30	Jingyu Dong, Congqi Liu, Hongli Cheng, Changlong Jiang, Bing Zhou*, Ming Huang*, Chuntai Liu*, Yuezhan Feng*. Recent progress of Ti ₃ C ₂ T _x MXene-based layered films for electromagnetic interference shielding. Journal of Materials Science and Technology . 2025, 223, 131-149. (IF=14.300)
2-31	Caidie Chang, Wenshuai Guo, Anni Yuan, Hao Yu, Kangran Li, Jiawei Zhu*,

	Qiang Li*, Changlong Jiang*. Background-free and dual-mode hydrogel sensing platform for visual Qualification of Promethazine. Chemical Engineering Journal . 2025, 504, 159025. (IF=13.200)
2-32	Xiaohui Kang, Lanpeng Zhang, Wei Jia, Liang Yang*, Changlong Jiang*. Visual Detection of Methylglyoxal in Multiple Scenarios via NIR-Excitable Reversible Ratiometric Fluorescent Hydrogel Sensor. Analytical Chemistry . 2024, 96, 52, 20568-20577. (IF=6.700)
2-33	Anqi Liu, Qipeng Zhang, Lei Pan, Fan Yang, Dan Lin*, Changlong Jiang*. Donor-Acceptor Type Solvatochromic Flavonoid Materials Fluorophores for Polarity Sensing and Real-Time Temperature Monitoring. Advanced Functional Materials . 2025, 35, 7, 2415250. (IF=19.000)
2-34	Xingzhen Li, Lei Pan, Liang Yang, Fan Yang*, Changlong Jiang*. Porphyrin nanoparticles-based portable smartphone platform for visual monitoring heavy metal Cr (III) in the environment. Sensors and Actuators B-Chemical . 2024, 417, 136133. (IF=7.700)
2-35	Xinyu Zhao, Xingwang Gu, Lihui Meng, Yongwei Chen, Qing Zhao, Shiyu Cheng, Wenfei Zhang, Tiantian Cheng, Chuting Wang, Zhengming Shi, Shengyin Jiao, Changlong Jiang, Guofang Jiao, Da Teng, Xiaolei Sun, Bilei Zhang, Yakun Li, Huiqin Lu, Changzheng Chen, Hao Zhang, Ling Yuan, Chang Su, Han Zhang, Song Xia, Anyi Liang, Mengda Li, Dan Zhu, Meirong Xue, Dawei Sun, Qiuming Li, Ziwu Zhang, Donglei Zhang, Hongbin Lv, Rishet Ahmat, Zilong Wang, Charumathi Sabanayagam, Xiaowei Ding*, Tien Yin Wong*, Youxin Chen*. Screening chronic kidney disease through deep learning utilizing ultra-wide-field fundus images. NPJ Digital Medicine . 2024, 7, 1, 275. (IF=15.122)
2-36	Lingfei Li, Dan Lin, Shihao Xu, Liang Yang*, Changlong Jiang*. Multi-deformable interpenetrating network thermosensitive hydrogel fluorescent device for real-time and visual detection of nitrite. Journal of Hazardous Materials . 2024, 478, 135471. (IF=11.300)
2-37	Yujie Guo, Lingfei Li, Shihao Xu*, Maofeng Zhang*, Changlong Jiang*. Ion coordination and chelation in Eu-MOFs matrices: Ultrafast fluorescence visual quantification monitoring of antibiotic residues. Talanta . 2024, 278, 126549. (IF=6.100)
2-38	Congqi Liu, Changlong Jiang, Yong Shen, Bing Zhou*, Chuntai Liu*, Yuezhan Feng*. Ultrafine Aramid Nanofiber-Assisted Large-Area Dense Stacking of

	MXene Films for Electromagnetic Interference Shielding and Multisource Thermal Conversion. ACS Applied Materials and Interfaces . 2024, 16, 29, 38620-38630. (IF=8.200)
2-39	Lei Pan, Fan Yang, Shihao Xu, Dan Lin, Changlong Jiang*. Fluorescence sensing probe based on functionalized mesoporous MOFs for non-invasive and detection of dopamine in human fluids. Talanta . 2024, 278, 126356. (IF=6.100)
2-40	Tianyue Zhang, Xueting Li, Dongmei Liu, Jiyu An, Maofeng Zhang*, Jian Hua Li*, Changlong Jiang*. Plasmonic AgNPs reinforced flexible hydrogel Surface-Enhanced Raman scattering (SERS) sensor for in-situ detection of curved samples. Chemical Engineering Journal . 2024, 494, 153082. (IF=13.200)
2-41	Lingfei Li, Shihao Xu, Xingzhen Li, Hongcheng Gao, Liang Yang*, Changlong Jiang*. Design of microfluidic fluorescent sensor arrays for real-time and synchronously visualized detection of multi-component heavy metal ions. Chemical Engineering Journal . 2024, 493, 152636. (IF=13.200)
2-42	Qianru Zhang, Anqi Liu, Xin Song, Shihao Xu, Lianguo Da, Dan Lin*, Changlong Jiang*. Ultrasensitive Fluorescent Microsensors Based on Aptamers Modified with SYBR Green I for Visual Quantitative Detection of Organophosphate Pesticides. Analytical Chemistry . 2024, 96, 23, 9636-9642. (IF=6.700)
2-43	Qipeng Zhang, Shihao Xu, Lanpeng Zhang, Liang Yang*, Changlong Jiang*. Multiemitting Ultralong Phosphorescent Carbonized Polymer Dots via Synergistic Enhancement Structure Design. Advanced Science . 2024, 11, 18, 2400781. (IF=14.100)
2-44	Jiawei Zhu, Hao Yu, Caidie Chang, Boyi Liang, Qiang Li*, Kai Dai*, Changlong Jiang*. Background-Free and Reversible Upconversion Hydrogel Sensing Platform for Visual Monitoring of Sulfite. Analytical Chemistry . 2024, 96, 6, 2711-2718. (IF=6.700)
2-45	Jiawei Zhu, Na Yu, Cuiqin Bao, Huafeng Shi, Qiang Li*, Kai Dai*, Changlong Jiang*. Upconversion-based intelligent dual-mode hydrogel nanosensor for visual quantitative detection of formaldehyde. Chemical Engineering Journal . 2024, 480, 148106. (IF=13.200)
2-46	Xiaohui Kang, Lanpeng Zhang, Liang Yang*, Changlong Jiang*. Ratiometric upconversion luminescence sensing platform for visual monitoring of antiarrhythmic drug level in serum. Chemical Engineering Journal . 2023, 476,

	146923. (IF=13.200)
2-47	Lingling Qin, Yujie Guo, Lingfei Li, Dan Lin, Yucheng Li, Shihao Xu*, Changlong Jiang*. Ratiometric Fluorescent Sensor Based on Hydrogen-Bond Triggering the Internal Filter Effect for Enzyme-Free and Visual Monitoring Pesticide Residues. ACS Sustainable Chemistry and Engineering . 2023, 11, 30, 11032-11040. (IF=7.300)
2-48	Weizhen Yan, Wanrong Wang, Guohao Zheng, Wuqi Dong, Ruogu Cheng, Xiaofei Shang, Yuechen Xu, Weijun Fang*, Hua Wang*, Changlong Jiang*, Tingting Zhao*. Two birds with one stone: Ratiometric sensing platform overcoming cross-interference for multiple-scenario detection and accurate discrimination of tetracycline analogs. Journal of Hazardous Materials . 2023, 458, 132016. (IF=11.300)
2-49	Jianjun Shen, Lingfei Li, Xiaohui Kang, Dan Lin, Youyu Xiao, Liang Yang*, Changlong Jiang*. Multilayered Upconversion Nanocomposite-Based Photodynamic Hydrogel Dressings for Wound Sterilizing and Healing. ACS Applied Nano Materials . 2023, 6, 14, 12726-12735. (IF=5.500)
2-50	Shihao Xu, Lingfei Li, Dan Lin, Liang Yang*, Zhenyang Wang, Changlong Jiang*. Rare-earth ions coordination enhanced ratiometric fluorescent sensing platform for quantitative visual analysis of antibiotic residues in real samples. Chinese Chemical Letters . 2023, 34, 107997-108001. (IF=8.900)
2-51	Lingling Qin, Jie Cao, Dan Lin, Shihao Xu*, Yucheng Li, Changlong Jiang*. A Strecker-like reaction triggering fluorescent sensing platform for enzyme-free and visual quantitative monitoring of carbamates. Chemical Engineering Journal . 2023, 464, 142550-142558. (IF=13.200)
2-52	Zhuang Ding, Yaru Wang, Wanpeng Zhou, Yanna Shui, Zhengdong Zhu, Maofeng Zhang*, Youju Huang*, Changlong Jiang*, Jianhua Li, Yucheng Wu. TiO ₂ compact layer induced charge transfer enhancement in a three-dimensional TiO ₂ -Ag array SERS substrate for quantitative and multiplex analysis. RSC Advances . 2023, 13, 12, 8270-8280. (IF=4.600)
三、专利	
3-1	一种供体-受体超分子荧光探针及其在菊酯农残检测中的应用, ZL202311479485.2, 发明专利。批准日期: 2025.4.18;
3-2	一种比率荧光探针的制备及其在亚硝酸盐检测中的应用, ZL202210974138.6 发明专利, 批准日期: 2025.2.28;
3-3	ZGC/ZIF-8-NH ₂ /壳聚糖水凝胶的制备与其在多巴胺检测中的应用, ZL20231

	1058644.1, 发明专利, 批准日期: 2025.8.26;
3-4	双信号比率型上转换发光探针及其制备方法和在草酸根检测中的应用, ZL202511021519.2, 发明专利, 批准日期: 2025.11.18;
3-5	用于芬太尼类化合物的采样装置及检测系统, ZL202421034859.X, 实用新型专利, 批准日期: 2025.03.21;
3-6	基于双桥联单体的卟啉基 COF 及气凝胶、制备方法和应用, ZL202510800950.0, 发明专利, 批准日期: 2025.09.16;
3-7	基于卟啉纳米粒子/蓝色碳点的荧光传感器及制备与其在 Cr ³⁺ 检测中的应用, 202410655095.4, 发明专利, 申请日期: 2025.08.14;
3-8	用于快速检测烟油中合成大麻素的组合物、试剂盒及方法, ZL202210490403.3, 发明专利, 批准日期: 2024.02.06。
四、标准	
4-1	生物检材中 2'-氯地西洋等 5 种氯代地西洋类物质检验液相色谱-质谱法
4-2	塑料检验拉曼光谱法
五、其他知识产权	
5-1	计算机软件著作权登记证书-食药环大数据应用平台 V1.0