2024年度“中国分析测试协会分析测试科学奖”公示材料

**金属有机骨架设计及化学测量应用**

**完成人：尹学博，夏炎，程月，王咏梅，尹华卿**

**完成单位：上海工程技术大学，南开大学，天津大学**

**成果简介（500字以内）**

分析化学已由定性和定量发展为更广泛的化学测量。本项目通过金属有机骨架（MOFs）设计，开发了系列多发光体系，实现了比例型传感、可视化检测、多目标物分析、荧光颜色调制及新型防伪编码信息加密等化学测量应用。构建了基于AIE配体的电子能级标尺，通过配体-镧系离子 MOFs发光行为，发现了“配位诱导发光”现象，与“聚集诱导发光（AIE）”同属旋转受限发光，丰富了旋转受限发光内容；从实验上修正了天线效应发光的能量差阈值。发展了MOFs基成像引导的药物智能释放体系，开发了成像引导的光动力、化动力和光热等非药物多模式治疗，实现了纳米酶级联催化放大治疗效果。通过智能药物释放到非药物治疗，再到级联催化放大，递进地提升了治疗效果、降低了传统化疗的耐药性和毒副作用。应邀在Acc. Chem. Res.撰写综述，总结多发光MOFs设计及化学测量应用。项目得到了三项国家自然科学面上项目资助，发表SCI收录论文26篇，获授权国家发明专利3件。10篇代表作发表在**J. Am. Chem. Soc.**，**Acc. Chem. Res.**，**Adv. Mater.**，**Adv. Funct. Mater.**，**Anal. Chem.**和**Chem. Sci.**等期刊（SCI他引1247次），五篇入选为ESI高被引论文。研究成果受到唐本忠和阎锡蕴院士，马胜前、陈邦林和李静教授等的高度评价和引用，并被X-MOL、CBG资讯和知乎等学术平台专栏报道。

10篇代表性论文

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