关于参与申报 2026 年度中国分析测试协会分析测试科学奖的公示

项目名称	电化学发光时空分辨测量新方法研究
申报奖种和等级	中国分析测试协会分析测试科学奖，一等奖
主要完成单位	浙江大学、南京师范大学、中国药科大学
主要完成人	苏彬，王亚锋，郭维亮，傅文轩，颜亚娟，丁昊，曹芷源，丁鹭榕
项目简介	本项目围绕电化学发光反应层难以定量、界面发光过程难以解析及低丰度生物标志物高灵敏检测等关键科学问题，系统开展电化学发光时空分辨测量新方法研究。项目团队提出了基于显微成像与光学干涉的电化学发光层定量测量策略，实现了发光层厚度的纳米级精准表征，将垂直空间分辨率由亚微米提升至 10 nm 以内，为解析低氧化电位路径、氧化还原路径和催化路径等不同反应机制提供了新工具。在此基础上，项目发展了表面敏感电化学发光显微成像方法，实现细胞–基质黏附、细胞–细胞连接、细胞–微环境相互作用及 T 细胞活化过程的免标记成像；进一步构建高效电化学发光探针与共反应剂体系，提升免疫分析灵敏度，并拓展至单分子膜蛋白成像、纸基快速检测、远程信息加密和微腔增强定向发光传输等应用。项目形成了电化学发光基础理论、测量方法和分析应用相结合的创新体系，为界面反应过程研究、生命分析检测和新型光电分析器件开发提供了重要技术支撑。
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