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师资队伍

师资概况

教师简介

名誉/兼职/客座教授

教授(研究员)

- 副教授(副研究员)
- 讲师



# 邓盛元

2015-12-30来源：作者：审核人：环境与生物工程学院编辑：阅读：5628

## 邓盛元

### 个人简介

出生年月：1984年10月

Email：sydeng@njust.edu.cn

办公地址：环境与生物工程学院B区302室

QQ：278631979

WeChat： 


研究领域：体外诊断(IVD)、即时检测(POCT)相关应用场景的分析方法、检验技术与终端设备的研发

## 教育和工作背景

2003年09月~2007年06月：南京大学，基础学科理科强化部(匡亚明学院)，本科

2007年09月~2013年01月：南京大学，化学化工学院(生命分析化学国家重点实验室)，博士(导师：鞠熀先)

2013年01月~2015年04月：南京理工大学，环境与生物工程学院，讲师

2014年04月~2014年05月：加拿大多伦多大学，生物分子科学系，访问学者(合作导师：Shana Kelly)

2015年05月~至今：南京理工大学，环境与生物工程学院，副教授

2016年04月~2018年10月：宾夕法尼亚州立大学，化学与分子生物学系，博士后(合作导师：Paul Cremer)

## 主讲课程

生物纳米材料、Biosensors、Biochemistry I、化学与社会、Biocatalysis & Biotransformation

## 承担项目

主持课题：

**01**国家自然科学基金面上项目《基于卟啉ECL的多肿瘤标志物成像新方法研究》(21775072)

**02**江苏省基础研究计划优秀青年基金项目《基于卟啉ECL的多组分生物分子成像新方法研究》(BK20170093)

**03**中国博士后科学基金第62批面上资助《卟啉的电致化学发光特性及其分子成像应用研究》(172750)

**04**企业委托开发《硒糖标志物的POCT快检法及在人尿测试中的应用研究》(1191021150)、《硒蛋白P免疫分析法的建立及在人血检测中的应用研究》

**05**南京理工大学自主科研专项计划“新型冠状病毒肺炎”应急专项《基于侧流金层析比色的POCT快检系统的研制及其在2019-nCoV疑似感染诊断中的应用研究》(30920010015)

**06**南京理工大学自主科研“杰青/优青”培育专项《基于生物正交化学的循环肿瘤细胞膜糖基寻址定量及其药物介导下的信号转导研究》

**07**国家自然科学基金青年基金《基于卟啉仿生纳米探针的电致化学发光核酸传感器的研究》(21305067)

**08**江苏省自然科学基金青年基金《卟啉@类石墨烯仿生分子探针的设计及电致发光核酸分析应用研究》(BK20130754)

**09**教育部高等学校博士学科点专项科研基金《新型卟啉基仿生纳米探针的设计及其固态电致化学发光核酸传感应用研究》(0133219120019)

**10**国家留学基金委员会“未来科学家”博士后留学计划资助项目《循环肿瘤DNA传感技术》(201506840137)

**11**中央高校基础研究计划专项基金《基于纳米静电纺丝的海洋放射性核素综合利用技术》(30920130112012)

**12**南京大学生命分析化学国家重点实验室开放研究基金项目《非贵金属仿生催化在电致发光生物传感中的应用研究》(SKLACLS1302)

参与课题：

**01**国家自然科学基金面上项目《基于肽核酸入侵的微电极阵列高灵敏双链DNA直接测定研究》(21575066)

**02**国家自然科学基金青年基金《基于核酸分子门控染料释放的多色荧光信号同时获取传感器阵列用于肿瘤标志物检测》(21505073)

**03**国家自然科学基金面上项目《卟啉–半导体纳米复合物的组装与光电生物传感》(21075060)

**04**国家自然科学基金主任基金《叉指微电极器件上的核酸分子超灵敏电检测研究》(21345002)

**05**国家自然科学基金面上项目《面向肿瘤预警与早期诊断的生物标志物高灵敏检测新方法研究》(21135002)

**06**中央高校基础研究计划专项基金《生物传感技术在海洋监测中的应用》(30920140112009)

发表论文(Google Scholar引用>1800，*h*-index: 25)

通讯或第一作者:

**01** *Terminal−Conjugated Non−Aggregated Constraints of Gold Nanoparticles on Lateral Flow Strips for Mobile Phone Readouts of Enrofloxacin*, *Biosensors and Bioelectronics***2020**, *160*, 112218

**02** *Porphyrin Trio−Pendant Fullerene Guest as an In Situ Universal Probe of High ECL Efficiency for Sensitive miRNA Detection*, *Biosensors and Bioelectronics***2020**, *150*, 111963

**03** *In Situ Terminus−Regulated DNA Hydrogelation for Ultrasensitive On−Chip MicroRNA assay*, *Biosensors and Bioelectronics***2019**, *137*, 263

**04** *Enhanced Electrochemiluminescent Brightness and Stability of Porphyrins by Supramolecular Pinning and Pinching for Sensitive Zinc Detection*, *Analytical and Bioanalytical Chemistry***2019**, *411*, 4797 (Topical Collection of Young Principal Investigator in (Bio-)Analytical Chemistry)

**05** *In Situ Formed Copper Nanoparticles Templated by TdT−Mediated DNA for Enhanced SPR Sensor−Based DNA Assay*, *Biosensors and Bioelectronics***2017**, *97*, 1

**06** *Polymerization Amplified SPR−DNA Assay on Noncovalently Functionalized Graphene*, *Biosensors and Bioelectronics***2017**, *89*, 319

**07** *Electro−Photodynamic Visualization of Singlet Oxygen Induced by Zinc Porphyrin Modified Microchip in Aqueous Media*, *ACS Applied Materials and Interfaces***2016**, *8*, 34833

**08** *Dumbbell−Shaped Carbon Quantum Dots/AuNCs Nanohybrid as an Efficient Ratiometric Fluorescent Probe for Sensing of Cadmium(II) Ions and L−Ascorbic Acid*, *Carbon***2016**, *96*, 1034

**09** *Cathodic Electrochemiluminescence of Singlet Oxygen Induced by the Electroactive Zinc Porphyrin in Aqueous Media*, *Electrochimica Acta***2016**, *190*, 64

**10** *Specific Electrochemiluminescence of Aptamer−Functionalized Quantum Dots with Lysozyme and Hemin as Co−Triggers*, *Chinese Journal of Chemistry***2016**, *34*, 331

**11** *Detection of Zinc Finger Protein (EGR1) Based on Electrogenerated Chemiluminescence from Singlet Oxygen Produced in a Nanoclay−Supported Porphyrin Environment*, *Analytical Chemistry***2015**, *87*, 9155

**12** *Carbon Nitride Nanosheet−Supported Porphyrin: A New Biomimetic Catalyst for Highly Efficient Bioanalysis*, *ACS Applied Materials and Interfaces***2015**, *7*, 543

**13** *Mass Effect of Redox Reactions: A Novel Mode for Surface Plasmon Resonance−Based Bioanalysis*, *Biosensors and Bioelectronics* **2015**, *74*, 183

**14** *Pyrocatechol Violet−Assisted In Situ Growth of Copper Nanoparticles on Carbon Nanotube: the Synergic Effect for Non−Enzymatic Electro−Chemical Sensing of Hydrogen Peroxide*, *Electrochimica Acta* **2015**, *155*, 78

**15** *Unusual* $Fe(CN)_6^{3-/4-}$ *Capture Induced by Synergic Effect of Electropolymeric Cationic Surfactant and Graphene: Characterization and Biosensing Application*, *ACS Applied Materials and Interfaces* **2014**, *6*, 21161

**16** *Chronopotentiometric Synthesis of Quantum Dots with Efficient Surface−Derived Near−Infrared Electrochemi- luminescence for Ultrasensitive Microchip−Based Ion−Selective Sensing*, *RSC Advances* **2014**, *4*, 29239

**17** *Electrochemiluminescent Quenching of Quantum Dots for Ultrasensitive Immunoassay through Oxygen Reduction Catalyzed by Nitrogen−Doped Graphene−Supported Hemin*, *Analytical Chemistry* **2013**, *85*, 5390

**18** *Label−Free Electrochemiluminescent Detection of DNA by Hybridization with Molecular Beacon to Form Hemin/G−Quadruplex Architecture for Signal Inhibition*, *Nanoscale* **2013**, *5*, 5435

**19** *A Ferrocenyl−Terminated Dendrimer as Efficient Quencher via Electron and Energy Transfer for Cathodic Electrochemiluminscent Immunoassay*, *Chemical Communications* **2013**, *49*, 2106 (Inside Front Cover)

**20** *Synthesis and Low−Potential Electrogenerated Chemiluminescence of Surface Passivated Phenol Formaldehyde Resin@CdS Quantum Dots*, *Journal of Materials Chemistry C* **2013**, *1*, 299

**21** *Electrogenerated Chemiluminescence of Nanomaterials for Bioanalysis*, *Analyst* **2013**, *138*, 43 (ESI, ″Top Ten Most Accessed Articles in 2013″)

**22** *Electrocatalytic Reduction of Coreactant by Highly Loaded Dendrimer−Encapsulated Palladium Nanoparticles for Sensitive Electrochemiluminescent Immunoassay*, *Chemical Communications* **2012**, *48*, 9159

**23** *Signal Amplification by Adsorption−Induced Catalytic Reduction of Dissolved Oxygen on Nitrogen−Doped Carbon Nanotubes for Electrochemiluminescent Immunoassay*, *Chemical Communications* **2011**, *47*, 12107

**24** *Amplified Electrochemiluminescence of Quantum Dots by Electrochemically Reduced Graphene Oxide for Nanobiosensing of Acetylcholine*, *Biosensors and Bioelectronics* **2011**, *26*, 4552

**25***A Glucose Biosensor Based on Direct Electrochemistry of Glucose Oxidase Immobilized on Nitrogen-Doped Carbon Nanotubes*, *Biosensors and Bioelectronics***2009**, *25*, 373 (ESI, ″Most Cited Biosensors and Bioelectronics Articles″)

其他：

**01***Aptamer−Initiated On−Particle Template−Independent Enzymatic Polymerization (Aptamer− OTEP) for Electrochemical Analysis of Tumor Biomarkers*, *Biosensors and Bioelectronics***2016**, *86*, 536

**02***Preparation of Amidoximated Coaxial Electrospun Nanofibers for Uranyl Uptake and Their Electrochemical Properties*, *Separation and Purification Technology***2016**, *171*, 44

**03***Ultrasensitive Electrochemical Aptasensor Based on Surface−Initiated Enzymatic Polymerization*, *Chinese Journal of Chemistry***2016**, *34*, 337

**04***Magnetic Zirconium Hexacyanoferrate(II) Nanoparticle as Tracing Tag for Electrochemical DNA Assay*, *Analytical Chemistry***2015**, *87*, 9093

**05***Aptamer−Wrapped Gold Nanoparticles for the Colorimetric Detection of Omethoate*, *Science China Chemistry***2015**, *59*, 237 (Annual Excellent Paper)

**06***Influence of 4−Tert−Butylpyridine/Guanidinium Thiocyanate Co−Additives on Band Edge Shift and Recombination of Dye−Sensitized Solar Cells: Experimental and Theoretical Aspects*, *Electrochimica Acta***2015**, 185, 69

**07***Ferricyanide Confined into the Integrative System of Pyrrolic Surfactant and SWCNTs: The Enhanced Electrochemical Sensing of Paracetamol*, *Electrochimica Acta***2015**, *186*, 16

**08***Sequential Electro−Deposition of Highly Stable Cu−Fe Prussian Blue Coordination Polymers at Indium Tin Oxide Electrode: Characterization and the Enhanced Sensing Application*, *Journal of the Electrochemical Society***2015**, *162*, H918

**09***Platinum Nanodendrites Functionalized Graphene Nanosheets as Nonenzymatic Label for Electrochemical Immunosensing*, *Journal of Materials Chemistry B***2014**, *1*, 5347

**10***Electrochemical Studies on the Interfacial Behaviors for the Eco−Friendly Magnetic Nanoparticles Based on Gamma−*$Fe_2O_3$, *Electrochimica Acta***2014**, *138*, 486

**11***Ionic Iridium Complex Coordinated with Tetrathiafulvalene−Fused Phenanthroline Ligand: Synthesis, Photophysical, Electrochemical and Electrochemiluminescence Properties*, *Journal of Organometallic Chemistry***2014**, *750*, 7

**12***Bioinspired Polydopamine as the Scaffold for the Active AuNPs Anchoring and the Chemical Simultaneously Reduced Graphene Oxide: Characterization and the Enhanced Biosensing Application*, *Biosensors and Bioelectronics***2013**, *49*, 466

**13***Graphene−Supported Ferric Porphyrin as Peroxidase Mimic for Electrochemical DNA Biosensing*, *Chemical Communications***2013**, *49*, 916 (ESI)

**14***Chemiluminescence Excited Photoelectrochemistry Using Graphene−Quantum Dots Nanocomposite for Biosensing*, *Chemical Communications***2012**, *48*, 6535

**15***Ultrasensitive Immunoassay of Protein Biomarker Based on Electrochemiluminescent Quenching of Quantum Dots by Hemin Bio−Bar−Coded Nanoparticle Tags*, *Analytical Chemistry***2011**, *83*, 5214

**16***Electrochemical Synthesis of Reduced Graphene Sheet−AuPd Alloy Nanoparticle Composites for Enzymatic Biosensing*, *Biosensors and Bioelectronics***2011**, *29*, 159

**17***Disposable Electrochemiluminescent Biosensor Using Bidentate−Chelated CdTe Quantum Dots as Emitter for Sensitive Detection of Glucose*, *Analyst***2011**, *137*, 140

**18***Carbon Nanospheres Enhanced Electrochemiluminescence of CdS Quantum Dots for Biosensing of Hypoxanthine*, *Talanta***2011**, *85*, 2154

**19***Pt−Dispersed Flower−Like Carbon Nanosheet Aggregation for Low−Overpotential Electrochemical, Biosensing*, *Biosensors and Bioelectronics***2010**, *26*, 432

**20***Electrochemiluminescence of CdSe Quantum Dots Composited with Nitrogen-Doped Carbon Nanotubes*, *Electroanalysis***2009**, *21*, 2495

**21***Ultra−Large Scale Molecular Dynamics Simulation for Nano−Engineering*, *Chemical Research in Chinese Universities***2008**, *24*, 367

**22***Where, and How, Does a Nanowire Break?**Nano Letter***2007**, *7*, 1208

## 授权专利

**[1]**(专利号：201710051776.X)《(3,4,5-三(十二烷氧基)苯甲基)三苯基四氟硼酸鏻及其在电致化学发光中的应用》(授权日：2019年06月25日)

**[2]**(专利号：2017104130370)《一种基于ZnTCPP@MOF的电化学免疫检测微囊藻毒素的方法》(授权日：2018年12月03日)

**[3]**(专利号：201510478459.7)《一种ZnTCPP/TOAB发光电极、制备方法及其在发光成像平台中的应用》(授权日：2018年06月12日)

**[4]**(专利号：201510501355.3)《基于间四苯基卟啉锌的电致化学发光体、制备方法及其应用》(授权日：2017年11月14日)

**[5]**(专利号：201510107736.3)《基于ZnPPIX电致化学发光的离子选择性电极及其应用》(授权日：2017年04月19日)

**[6]**(专利号：201410241361.5)《一种过氧化物模拟酶、制备及其应用》(授权日：2016年04月20日)

## 会议报告

**01***Ligand Binding Causes Electro−Reduced Porphyrin Receptors to Chemotax*, 5th International Symposium on Electrochemistry: "Electrochemistry at Nanostructured Interfaces", Cape Town, South Africa, **2019** (Oral)

**02***Enhanced Electrochemiluminescent Brightness and Stability of Porphyrins by Supramolecular Pinning and Pinching for Sensitive Zinc Detection*, 70th Annual Meeting of the International Society of Electrochemistry, Durban, South Africa, **2019**

**03***Glucose Fuel Cell−Stimulated Robotics of Janus Structure*, International Symposium on "Energy Storage and Industry 4.0: Challenges and Prospects", Sun City, South Africa, **2019**

**04***Molecular Binding Induced Chemotaxis*, Annual Motors' Meeting of Materials Research Science and Engineering Centers (MRSEC), University Park, U.S., **2017** (Oral)

**05***Electro−Photodynamic Visualization of Singlet Oxygen Induced by Zinc Porphyrin Modified Microchip in Aqueous Media*, 253rd National Meeting of the American Chemical Society (ACS) on Advanced Materials, Technologies, Systems, and Processes, Philadelphia, U.S., **2017**

**06***Label−Free Biomimetic Electrocatalysis−Induced Precipitation for Ultrasensitive Bioanalysis*, 65th Annual Meeting of the International Society of Electrochemistry,Lausanne, Switzerland, **2014**

**07***Cathodic Electrochemiluminescence of Porphyrin for Solid−State Ion−Selective Sensing*,1st International Meeting on Electrogenerated Chemiluminescence (ECL' 2014), Bertinoro, Italy, **2014**

**08***Rational Design of Bioinspired Oxygen Reductase for Electrochemiluminescent Determination of Sequence−Encoding Hemagglutinin of*

*Avian Influenza Virus*, 14th Topical Meeting of the International Society of Electrochemistry − Electrochemistry for Life Science and Bioanalysis, Nanjing, China, **2013**

**09***Surface−Derived Near−Infrared Electrochemiluminescence from Electrogenerated Antidote− Stabilized Quantum Dots for Microsensing of Bordeaux Mixture Residue*, 14th International Symposium on Electroanalytical Chemistry(14th ISEAC), Changchun, China, **2013**

**10***G−Quadruplex Promoted Electrogenerated Phosphorescence of Zinc(II) Protoporphyrin IX as DNAzyme for Molecular Scale Signal Transduction*, 15th Topical Meeting of the International Society of Electrochemistry − Interfacial Electrochemistry at Atomic, Molecular and Nanoscale Domains, Niagara, Canada, **2013**

**11***Electrochemical Synthesis of Reduced Graphene Sheet−AuPd Alloy Nanoparticle Composites for Enzymatic Biosensing*, 220th The Electrochemical Society (ECS) Annual Meeting and Electrochemical Energy Summit, Boston, U.S., **2011**

## 奖励荣誉

**(1)**南京理工大学校级一类奖励“2015~2016年度青年教师进步奖”，2016年09月；

**(2)**江苏高校“青蓝工程”优秀青年骨干教师培养对象，2016年04月；

**(3)**教育部高等教育司“中国大学视频公开课”精品视频公开课《神奇的化学元素》，2015年04月，排名3；

**(4)**高等教育学会“大学素质教育精品通选课”A类《化学与社会》，2015年04月，排名2；

**(5)**南京市“第十一届自然科学学术论文奖”《氮化碳纳米薄片支撑的卟啉一种新颖的仿生催化剂用于高效的生物分析》，2015年04月；

**(6)**南京理工大学“卓越计划”之“紫金之星”第一层次培养对象《面向肿瘤早期诊断的新型分子诊断和细胞成像技术研究》，2015年01月；

**(7)**教育部“高等学校科学研究优秀成果奖自然科学奖”一等奖《生物分子与细胞高效检测新原理与分析新方法研究》，2014年03月，排名8。