

**TENURE CURRICULUM VITAE  
OF  
Yi Xiao at Chemistry and Biochemistry**

**EDUCATION**

<b>Degree</b>	<b>Institution</b>	<b>Field</b>	<b>Dates</b>
Ph.D.	Nanjing University P.R. China	Analytical Chemistry	1997 – 2000
M.S.	Northwest University P.R. China	Analytical Chemistry	1994 – 1997
B.S.	Northwest University P.R. China	Analytical Chemistry	1990 – 1994

**FULL-TIME ACADEMIC EXPERIENCE**

<b>Institution</b>	<b>Rank</b>	<b>Field</b>	<b>Dates</b>
Department of Materials & Department of Mechanical Engineering University of California Santa Barbara, CA, USA	Research Associate Professor	Chemistry	07/2010 – 07/2011
Department of Materials & Department of Mechanical Engineering University of California Santa Barbara, CA, USA	Research Assistant Professor	Chemistry	10/2007 – 07/2010
Department of Physics University of California Santa Barbara, CA, USA	Postdoctoral Fellow	Chemistry	10/2004 – 09/2007
Institute of Chemistry The Hebrew University of Jerusalem Jerusalem, Israel	Postdoctoral Fellow	Chemistry	11/2001 – 09/2004

**EMPLOYMENT RECORD AT FIU**

<b>Rank</b>	<b>Dates</b>
Assistant Professor	08/2011 – Present

## PEER-REVIEWED ARTICLES

Note: Underline denotes FIU undergraduates, graduates, postdocs and visiting scholars.

\*: Corresponding author, IF: impact factor.

### Publications while Assistant Professor at FIU

1. Yu H.X., Canoura J., Guntupalli B., Lou X.H. & **Xiao Y.\*** (2016) A cooperative-binding split aptamer assay for rapid, specific and ultra-sensitive fluorescence detection of cocaine in saliva. **Chem. Sci.**, DOI: 10.1039/C6SC01833E. (IF: 9.144). Time cited: 0
2. Guntupalli B., Liang P.P., Lee J.H., Yang Y.H., Yu H.X., Canoura J., He J., Li W.Z., Weizmann Y. & **Xiao Y.\*** (2015) Ambient filtration method to rapidly prepare highly conductive, paper-based porous gold films for electrochemical biosensing. **ACS Appl. Mater. Interfaces**, 7, 27049 – 27058. (IF: 7.145). Time cited: 0
3. Zhao T., Liu R., Ding X.F., Zhao J.C., Yu H.X., Wang L., Xu Q., Wang X., Lou X.H.\* & **Xiao Y.\*** (2015) Nanoprobe-enhanced, split aptamer-based electrochemical sandwich assay for ultrasensitive detection of small molecules. **Anal. Chem.**, 87, 7712 – 7719. (IF: 5.886). Time cited: 3
4. Liang P.P., Yu H.X., Guntupalli B. & **Xiao Y.\*** (2015) Paper-based device for rapid visualization of NADH based on dissolution of gold nanoparticles. **ACS Appl. Mater. Interfaces**, 7, 15023 – 15030. (IF: 7.145). Time cited: 5
5. Roncancio D., Yu H.X., Xu X.W., Wu S., Liu R., Debord J., Lou X.H. & **Xiao Y.\*** (2014) A label-free aptamer-fluorophore assembly for rapid and specific detection of cocaine in biofluids. **Anal. Chem.**, 86, 11100 – 11106. (IF: 5.886). Time cited: 12
6. Wu S., Liang P.P., Yu H.X., Xu X.W., Liu Y., Lou X.H. & **Xiao Y.\*** (2014) Amplified single base-pair mismatch detection via aggregation of exonuclease-sheared gold nanoparticles. **Anal. Chem.**, 86, 3461 – 3467. (IF: 5.886). Time cited: 12
7. Lou X.H.\*, Zhao T., Liu R., Ma J. & **Xiao Y.\*** (2013) Self-assembled DNA monolayer buffered dynamic ranges of mercuric electrochemical sensor. **Anal. Chem.**, 85, 7574 – 7580. (IF: 5.886). Time cited: 25
8. Oh S.S., Plakos K., **Xiao Y.**, Eisenstein M. & Soh H.T. (2013) *In vitro* selection of shape-changing DNA nanostructures capable of binding-induced cargo release. **ACS Nano**, 7, 9675 – 9683. (IF: 13.344). Time cited: 5
9. Deborggraeve S., Dai J.Y., **Xiao Y.\*** & Soh H.T.\* (2013) Controlling the function of DNA nanostructures with specific trigger sequences. **Chem. Commun.**, 49, 397 – 399. (IF: 6.567). Time cited: 3
10. Ahmad K.M., **Xiao Y.** & Soh H.T. (2012) Selection is more intelligent than design: improving the affinity of a bivalent ligand through directed evolution. **Nucleic Acids Res.**, 40, 11777 – 11783. (IF: 9.202). Time cited: 14
11. Feng L.Y., Zhao C.Q., **Xiao Y.**, Wu L., Ren J.S. & Qu X.G. (2012) Electrochemical DNA three-way junction based sensor for distinguishing chiral metallo-supramolecular complexes. **Chem. Commun.**, 48, 6900 – 6902. (IF: 6.567). Time cited: 15
12. Zuo X.L., Xia F., Patterson A., Soh H.T. **Xiao Y.\*** & Plaxco K.W.\* (2011) Two-step, PCR-free telomerase detection by using exonuclease III-aided target recycling. **ChemBioChem**, 12, 2745 – 2747. (IF: 2.850). Time cited: 31

13. Olmsted I.R., **Xiao Y.**, Cho M., Csordas A.T., Sheehan J.H, Meiler J., Soh H.T. & Bornhop D.J. (2011) Measurement of aptamer-protein interactions with back-scattering interferometry. **Anal. Chem.**, 83, 8867 – 8870. (IF: 5.886). Time cited: 11
14. Ahmad K.M., Oh S.S., Kim S., McClellan F.M., **Xiao Y.\*** & Soh H.T.\* (2011) Probing the limits of aptamer affinity with a microfluidic SELEX platform. **PLoS One**, 6, e27051. (IF: 3.057). Time cited: 37
15. Hsieh K.W., White R.J., Ferguson B.S., Plaxco K.W., **Xiao Y.\*** & Soh H.T.\* (2011) Polarity-switching electrochemical sensor for specific detection of single-nucleotide mismatches. **Angew. Chem., Int. Ed.**, 50, 11176 – 11180. (IF: 11.709). Time cited: 23

#### **Publications while Research Fellow**

16. Oh S.S., Ahmad K.M., Cho M., Kim S., **Xiao Y.\*** & Soh H.T.\* (2011) Improving aptamer selection efficiency through volume dilution, magnetic concentration, and continuous washing in microfluidic channels. **Anal. Chem.**, 83, 6883 – 6889. (IF: 5.886). Time cited: 21
17. Ferguson B.S., Buchsbaum S.F., Wu T.T., Hsieh K.W., **Xiao Y.**, Sun R. & Soh H.T. (2011) Genetic analysis of H1N1 influenza virus from throat swab samples in a microfluidic system for point-of-care diagnostics. **J. Am. Chem. Soc.**, 133, 9129 – 9135. (IF: 13.038). Time cited: 77
18. Wang J.P., Liu Y.L., Teesalu T., Sugahara K.N., Kotamrajua V.R., Adams J.D., Ferguson B.S., Gong Q., Oh S.S., Csordas A.T., Cho M., Ruoslahti E., **Xiao Y.\*** & Soh H.T.\* (2011) Selection of phage-displayed peptides on live adherent cells in microfluidic channels. **Proc. Natl. Acad. Sci. U.S.A.**, 108, 6909 – 6914. (IF: 9.423). Time cited: 22
19. Xia F., White R.J., Zuo X.L., Patterson A., **Xiao Y.**, Kang D., Gong X., Plaxco K.W. & Heeger A.J. (2010) An electrochemical super-sandwich assay for sensitive and selective DNA detection in serum. **J. Am. Chem. Soc.**, 132, 14346 – 14348. (IF: 13.038). Time cited: 116
20. **Xiao Y.**, Dane K.Y., Uzawa T., Csordas A., Qian J.R., Soh H.T., Daugherty P.S., Lagally E.T., Heeger A.J. & Plaxco K.W. (2010) Detection of telomerase activity in high concentration of cell lysates using primer-modified gold nanoparticles. **J. Am. Chem. Soc.**, 132, 15299 – 15307. (IF: 13.038). Time cited: 42
21. Cho M., **Xiao Y.**, Nie J., Stewart R., Csordas A.T., Oh S.S., Thomson J.A. & Soh H.T. (2010) Quantitative selection of DNA aptamers through microfluidic selection and high-throughput sequencing. **Proc. Natl. Acad. Sci. U.S.A.**, 107, 15373 – 15378. (IF: 9.423). Time cited: 97
22. Oh S.S., Plakos K.J.I., Lou X.H., **Xiao Y.\*** & Soh H.T.\* (2010) In vitro selection of structure-switching, self-reporting aptamers. **Proc. Natl. Acad. Sci. U.S.A.**, 107, 14053 – 14058. (IF: 9.423). Time cited: 37
23. Xia F., Zuo X.L., Yang R.Q., White R.J., **Xiao Y.**, Kang D., Gong X., Lubin A.A., Vallée-Bélisle A., Yuen J.D., Hsu B.Y.B. & Plaxco K.W. (2010) Label-free, dual-analyte electrochemical biosensors: a new class of molecular-electronic logic gates. **J. Am. Chem. Soc.**, 132, 8557 – 8559. (IF: 13.038). Time cited: 71
24. Xia F., Zuo X.L., Yang R.Q., **Xiao Y.**, Kang D., Vallée-Bélisle A., Gong X., Yuen J.D., Hsu B.Y.B., Heeger A.J. & Plaxco K.W. (2010) Colorimetric detection of DNA, small molecules,

- proteins and ions, using unmodified gold nanoparticles and conjugated polyelectrolytes. **Proc. Natl. Acad. Sci. U.S.A.**, 107, 10837 – 10841. (IF: 9.423). Time cited: 258
25. Hsieh K.W., **Xiao Y.\*** & Soh H.T.\* (2010) Electrochemical DNA detection via exonuclease and target-catalyzed transformation of surface-bound probes. **Langmuir**, 26, 10392 – 10396. (IF: 3.993). Time cited: 49
  26. Zuo X.L., Xia F., **Xiao Y.\*** & Plaxco K.W.\* (2010) Sensitive and selective, amplified fluorescence DNA detection based on Exonuclease III-aided target recycling. **J. Am. Chem. Soc.**, 132, 1816 – 1818. (IF: 13.038). Time cited: 265
  27. Xia F., Zuo X.L., Yang R.Q., **Xiao Y.**, Kang D., Vallée-Bélisle A., Gong X., Heeger A.J. & Plaxco K.W. (2010) On the binding of cationic, water-soluble conjugated polymer to DNA: electrostatic and hydrophobic interactions. **J. Am. Chem. Soc.**, 132, 1252 – 1254. (IF: 13.038). Time cited: 55
  28. Csordas A.T., Gerdon A.E., Adams J.D., Qian J.R., Oh S.S., **Xiao Y.\*** & Soh H.T.\* (2010) Detection of proteins in serum via micromagnetic aptamer PCR (MAP) technology. **Angew. Chem., Int. Ed.**, 49, 355 – 358. (IF: 11.709). Time cited: 58
  29. Peng Y.H., Wang X.H., **Xiao Y.**, Feng L.Y., Zhao C., Ren J.S. & Qu X.G. (2009) I-Motif quadruplex DNA-based biosensor for distinguishing single- and multiwalled carbon nanotubes. **J. Am. Chem. Soc.**, 131, 13813 – 13818. (IF: 13.038). Time cited: 67
  30. **Xiao Y.\***, Lou X.H., Uzawa T., Plakos K.J.I., Plaxco K.W. & Soh H.T.\* (2009) An electrochemical sensor for single nucleotide polymorphism detection in serum based on a triple-stem DNA probe. **J. Am. Chem. Soc.**, 131, 15311 – 15316. (IF: 13.038). Time cited: 97
  31. Lou X.H., **Xiao Y.**, Wang Y., Mao H.G. & Zhao J.L. (2009) Label-free colorimetric screening of nuclease activity and substrates by using unmodified gold nanoparticles. **ChemBioChem**, 10, 1973 – 1977. (IF: 2.850). Time cited: 16
  32. Qian J.R., Lou X.H., Zhang Y.T., **Xiao Y.\*** & Soh H.T.\* (2009) Generation of highly specific aptamers via micromagnetic selection. **Anal. Chem.**, 81, 5490 – 5495. (IF: 5.886). Time cited: 61
  33. Zuo X.L., **Xiao Y.** & Plaxco K.W. (2009) High specificity, electrochemical sandwich assays based on single aptamer sequences and suitable for the direct detection of small-molecule targets in blood and other complex matrices. **J. Am. Chem. Soc.**, 131, 6944 – 6945. (IF: 13.038). Time cited: 229
  34. Swensen J.S., **Xiao Y.**, Ferguson B.S., Lubin A.A., Lai R.Y., Heeger A.J., Plaxco K.W. & Soh H.T. (2009) Continuous, real-time monitoring of cocaine in undiluted blood serum via a microfluidic electrochemical aptamer-based sensor. **J. Am. Chem. Soc.**, 131, 4262 – 4266. (IF: 13.038). Time cited: 152
  35. Lou X.H., Qian J.R., **Xiao Y.**, Viel L., Gerdon A.E., Lagally E.T., Atzberger P., Tarasow T.M., Heeger A.J. & Soh H.T. (2009) Micromagnetic selection of aptamers in microfluidic channels. **Proc. Natl. Acad. Sci. U.S.A.**, 106, 2989 – 2994. (IF: 9.423). Time cited: 145
  36. **Xiao Y.**, Plakos K.J.I., Lou X.H., White R.J., Plaxco K.W. & Soh H.T. (2009) Fluorescence detection of single-nucleotide polymorphisms with a single, self-complementary, triple-stem DNA probe. **Angew. Chem., Int. Ed.**, 48, 4354 – 4358. (IF: 11.709). Time cited: 64

#### **Publications while Postdoctoral Fellow**

37. Cash K.J., Heeger A.J., Plaxco K.W. & **Xiao Y.\*** (2009) Optimization of a reusable, DNA pseudoknot-based electrochemical sensor for sequence-specific DNA detection in blood serum. **Anal. Chem.**, 81, 656 – 661. (IF: 5.886). Time cited: 69
38. **Xiao Y.**, Uzawa T., White R.J., DeMartini D. & Plaxco K.W. (2009) On the signaling of electrochemical aptamer-based sensors: collision- and folding-based mechanisms. **Electroanalysis**, 21, 1267 – 1271. (IF: 2.471). Time cited: 38
39. White R.J., Phares N., Lubin A.A., **Xiao Y.** & Plaxco K.W. (2008) Optimization of electrochemical aptamer-based sensors via optimization of probe packing density and surface chemistry. **Langmuir**, 24, 10513 – 10518. (IF: 3.993). Time cited: 113
40. **Xiao Y.**, Qu X.G., Plaxco K.W. & Heeger A.J. (2007) Label-free electrochemical detection of DNA in blood serum via target-induced resolution of an electrode-bound DNA pseudoknot. **J. Am. Chem. Soc.**, 129, 11896 – 11897. (IF: 13.038). Time cited: 160
41. **Xiao Y.**, Rowe A.A. & Plaxco K.W. (2007) Electrochemical detection of parts-per-billion lead via an electrode-bound DNAzyme assembly. **J. Am. Chem. Soc.**, 129, 262 – 263. (IF: 13.038). Time cited: 255
42. **Xiao Y.**, Lai R.Y. & Plaxco K.W. (2007) Preparation of electrode-immobilized, redox-modified oligonucleotides for electrochemical DNA and aptamer-based sensing. **Nat. Protoc.**, 2, 2875 – 2880. (IF: 9.646). Time cited: 140
43. **Xiao Y.**, Lubin A.A., Baker B.R., Plaxco K.W. & Heeger A.J. (2006) Single-step electronic detection of femtomolar DNA by target-induced strand displacement in an electrode-bound duplex. **Proc. Natl. Acad. Sci. U.S.A.**, 103, 16677 – 16680. (IF: 9.423). Time cited: 153
44. **Xiao Y.**, Piorek B.D., Plaxco K.W. & Heeger A.J. (2005) A reagentless signal-on architecture for electronic, aptamer-based sensors via target-induced strand displacement. **J. Am. Chem. Soc.**, 127, 17990 – 17991. (IF: 13.038). Time cited: 346
45. **Xiao Y.**, Lubin A.A., Heeger A.J. & Plaxco K.W. (2005) Label-free electronic detection of thrombin in blood serum by using an aptamers-based sensor. **Angew. Chem., Int. Ed.**, 44, 5456 – 5459. (IF: 11.709). Time cited: 400
46. **Xiao Y.**, Shlyahovsky B., Popov I., Pavlov V. & Willner I. (2005) Shape and color of Au nanoparticles follow biocatalytic processes. **Langmuir**, 21, 5659 – 5662. (IF: 3.993). Time cited: 51
47. **Xiao Y.**, Pavlov V., Shlyahovsky B. & Willner I. (2005) An Os-II-bisbipyridine-4-picolinic acid complex mediates the biocatalytic growth of Au nanoparticles: optical detection of glucose and acetylcholine esterase inhibition. **Chem. - Eur. J.**, 11, 2698 – 2704. (IF: 5.771). Time cited: 38
48. Pavlov V., **Xiao Y.** & Willner I. (2005) Inhibition of the acetylcholine esterase-stimulated growth of Au nanoparticles: Nanotechnology-based sensing of nerve gases. **Nano Lett.**, 5, 649 – 653. (IF: 13.779). Time cited: 138
49. Shlyahovsky B., Katz E., **Xiao Y.**, Pavlov V. & Willner I. (2005) Optical and electrochemical detection of NADH and of NAD<sup>+</sup>-dependent biocatalyzed processes by the catalytic deposition of copper on gold nanoparticles. **Small**, 1, 213 – 216. (IF: 8.315). Time cited: 53
50. Shi L.X., **Xiao Y.** & Willner I. (2004) Electrical contacting of glucose oxidase by DNA-templated polyaniline wires on surfaces. **Electrochem. Commun.**, 6, 1057 – 1060. (IF: 4.847). Time cited: 50

51. Pavlov V., **Xiao Y.**, Shlyahovsky B. & Willner I. (2004) Aptamer-functionalized Au nanoparticles for the amplified optical detection of thrombin. **J. Am. Chem. Soc.**, 126, 11768 – 11769. (IF: 13.038). Time cited: 483
52. Niazov T., Pavlov V., **Xiao Y.**, Gill R. & Willner I. (2004) DNAzyme-functionalized Au nanoparticles for the amplified detection of DNA or telomerase activity. **Nano Lett.**, 4, 1683 – 1687. (IF: 13.779). Time cited: 228
53. **Xiao Y.**, Pavlov V., Niazov T., Dishon A., Kotler M. & Willner I. (2004) Catalytic beacons for the detection of DNA and telomerase activity. **J. Am. Chem. Soc.**, 126, 7430 – 7431. (IF: 13.038). Time cited: 297
54. Pavlov V., **Xiao Y.**, Gill R., Dishon A., Kotler M. & Willner I. (2004) Amplified chemiluminescence surface detection of DNA and telomerase activity using catalytic nucleic acid labels. **Anal. Chem.**, 76, 2152 – 2156. (IF: 5.886). Time cited: 232
55. **Xiao Y.**, Pavlov V., Gill R., Bourenko T. & Willner I. (2004) Lighting up biochemiluminescence by surface self-assembly of DNA-hemin complex. **ChemBioChem**, 5, 374 – 379. (IF: 2.850). Time cited: 6
56. **Xiao Y.**, Pavlov V., Levine S., Niazov T., Markovitch G. & Willner I. (2004) Catalytic growth of Au nanoparticles by NAD(P)H cofactors: optical sensors for NAD(P)<sup>+</sup>-dependent biocatalyzed transformations. **Angew. Chem., Int. Ed.**, 43, 4519 – 4522. (IF: 11.709). Time cited: 118
57. **Xiao Y.**, Patolsky F., Katz E., Hainfeld J.F. & Willner I. (2003) “Plugging into enzymes”: Nanowiring of redox enzymes by a gold nanoparticle. **Science**, 299, 1877 – 1881. (IF: 34.661). Time cited: 867
58. **Xiao Y.**, Kharitonov A.B., Patolsky F., Weizmann Y. & Willner I. (2003) Electrocatalytic intercalator-induced winding of double-stranded DNA with polyaniline. **Chem. Commun.**, 13, 1540 – 1541. (IF: 6.567). Time cited: 36

#### **Publications while Graduate Student**

59. Ju H.X., **Xiao Y.**, Lu X.J. & Chen H.Y. (2002) Electrooxidative coupling of a toluidine blue O terminated self-assembled monolayer studied by electrochemistry and surface enhanced Raman spectroscopy. **J. Electroanal. Chem.**, 518, 123 – 130. (IF: 2.729). Time cited: 18
60. Hu X.Y., **Xiao Y.** & Chen H.Y. (2001) Anion adsorption on an Au colloid monolayer based cysteamine-modified gold electrode. **Chem. Res. Chin. Univ.**, 17, 159 – 167. (IF: 1.086). Time cited: 2
61. **Xiao Y.**, Ju H.X. & Chen H.Y. (2000) Direct electrochemistry of horseradish peroxidase immobilized on a colloid/cysteamine-modified gold electrode. **Anal. Biochem.**, 278, 22 – 28. (IF: 2.243). Time cited: 252
62. **Xiao Y.**, Ju H.X. & Chen H.Y. (1999) A reagentless hydrogen peroxide sensor based on incorporation of horseradish peroxidase in poly(thionine) film on a monolayer modified electrode. **Anal. Chim. Acta**, 391, 299 – 306. (IF: 4.712). Time cited: 81
63. **Xiao Y.**, Ju H.X. & Chen H.Y. (1999) Hydrogen peroxide sensor based on horseradish peroxidase-labeled Au colloids immobilized on gold electrode surface by cysteamine monolayer. **Anal. Chim. Acta**, 391, 73 – 82. (IF: 4.712). Time cited: 313

64. Hu X.Y., **Xiao Y.** & Chen H.Y. (1999) Adsorption characteristics of  $\text{Fe}(\text{CN})_6^{3-/4-}$  on Au colloids as monolayer films on cysteamine-modified gold electrode. **J. Electroanal. Chem.**, 466, 26 – 30. (IF: 2.729). Time cited: 51
65. Ju H.X., Zhou D.M., **Xiao Y.** & Chen H.Y. (1998) Amperometric biosensor for glucose based on a nanometer-sized microband gold electrode coimmobilized with glucose oxidase and poly(o-phenylenediamide). **Electroanalysis**, 10, 541 – 545. (IF: 2.471). Time cited: 20

## **CHAPTER IN BOOK**

**Xiao Y.** & Plaxco K.W. “Electrochemical approaches to aptamer-based sensing.” In: *Functional nucleic acids for analytical applications*, Li Y.F. and Lu Y., eds. Kluwer/Springer. (2009)

## **PRESENTATIONS**

Note: Underline denotes FIU undergraduates, graduates, postdocs and visiting scholars.

1. **Xiao Y.** (2016) Bringing biosensors to the bedside. *Invited talk*, University of Miami, Medical Campus - Batchelor Children's Research Institute, Miami, FL, May 18.
2. **Xiao Y.** (2016) Paper-based devices for rapid and sensitive colorimetric and electrochemical biosensing. *Invited talk*, 2016 ACS Florida Annual Meeting and Exposition, Tampa, FL, May 5 – 7.
3. Canoura J., Wang Z.W., Yu H.X., Ng B., Roncancio D. & **Xiao Y.** (2016) Utilizing nuclease screening of ligand-aptamer complexes to enhance specificity of an aptamer-based cocaine assay. *Poster presentation*, 2016 ACS Florida Annual Meeting and Exposition, Tampa, FL, May 5 – 7.
4. Yu H.X., Guntupalli B. & **Xiao Y.** (2016) A cooperative-binding split aptamer assay for rapid, specific and ultra-sensitive fluorescence detection of cocaine in saliva. *Oral presentation*, 2016 Conference of Undergraduate Research at FIU (CURFIU), Miami, FL, March 30 – 31.
5. Guntupalli B., Liang P.P., Lee J.H., Yang Y.H., Yu H.X., Canoura J., He J., Li W.Z., Weizmann Y. & **Xiao Y.** (2016) Ambient filtration method to rapidly prepare highly conductive, paper-based porous gold films for electrochemical biosensing. *Oral presentation*, 2016 Conference of Undergraduate Research at FIU (CURFIU), Miami, FL, March 30 – 31.
6. Liang P.P., Yu H.X., Guntupalli B. & **Xiao Y.** (2016) Paper-based device for rapid visualization of NADH based on dissolution of gold nanoparticles. *Oral presentation*, 2016 Conference of Undergraduate Research at FIU (CURFIU), Miami, FL, March 30 – 31.
7. Canoura J., Wang Z.W., Yu H.X., Ng B., Roncancio D. & **Xiao Y.** (2016) Utilizing nuclease screening of ligand-aptamer complexes to enhance specificity of an aptamer-based cocaine assay. *Oral presentation*, 2016 Conference of Undergraduate Research at FIU (CURFIU), Miami, FL, March 30 – 31.
8. Roncancio D., Yu H.X., Xu X.W., Wu S., Liu R., Debord J., Lou X.H. & **Xiao Y.** (2016) A label-free aptamer-fluorophore assembly for highly sensitive and specific detection of cocaine. *Oral presentation*, 2016 Conference of Undergraduate Research at FIU (CURFIU) Miami, FL, March 30 – 31.

9. Liang P.P., Yu H.X., Guntupalli B. & **Xiao Y.** (2016) Paper-based device for rapid visualization of NADH based on dissolution of gold nanoparticles. *Poster presentation*, FIU's annual Scholarly Forum during Graduate Student Appreciation Week (GSAW), Florida International University, Miami, FL, March 28 – 29.
10. Roncancio D., Yu H.X., Xu X.W., Wu S., Liu R., Debord J., Lou X.H. & **Xiao Y.** (2016) A label-free aptamer-fluorophore assembly for highly sensitive and specific detection of cocaine. *Oral presentation*, FIU's annual Scholarly Forum during Graduate Student Appreciation Week (GSAW), Florida International University, Miami, FL, March 28 – 29.
11. Yu H.X., Guntupalli B. & **Xiao Y.** (2016) A cooperative-binding split aptamer assay for rapid, specific and ultra-sensitive fluorescence detection of cocaine in saliva. *Oral presentation*, FIU's annual Scholarly Forum during Graduate Student Appreciation Week (GSAW), Florida International University, Miami, FL, March 28 – 29.
12. Guntupalli B., Liang P.P., Lee J.H., Yang Y.H., Yu H.X., Canoura J., He J., Li W.Z., Weizmann Y. & **Xiao Y.** (2016) Ambient filtration method to rapidly prepare highly conductive, paper-based porous gold films for electrochemical biosensing. *Oral presentation*, FIU's annual Scholarly Forum during Graduate Student Appreciation Week (GSAW), Florida International University, Miami, FL, March 28 – 29.
13. Yu H.X., Guntupalli B. & **Xiao Y.** (2016) A cooperative-binding split aptamer assay for rapid, specific and ultra-sensitive fluorescence detection of cocaine in saliva. *Oral presentation*, Fifth Annual Forensic Science Symposium, Miami, FL, March 15 – 16.
14. Roncancio D., Yu H.X., Xu X.W., Wu S., Liu R., Debord J., Lou X.H. & **Xiao Y.** (2016) A label-free aptamer-fluorophore assembly for highly sensitive and specific detection of cocaine. *Oral presentation*, Fifth Annual Forensic Science Symposium, Miami, FL, March 15 – 16.
15. **Xiao Y.** (2016) Bringing biosensors to the bedside. *Invited talk*, University of Maryland, Baltimore County, Baltimore, Maryland, February 29.
16. **Xiao Y.** (2015) Base-pair mismatch detection. *Invited talk*, FIU Biomolecular Sciences Institute Symposium on DNA Repair and Genome Stability: In honor of the 2015 Nobel Prize in Chemistry for DNA Repair. Miami, FL, December 16.
17. Guntupalli B., Liang P.P., Yang Y.H., He J., Li W.Z. & **Xiao Y.** (2015) Ambient filtration method to rapidly prepare highly conductive, paper-based porous gold films. *Oral presentation*, 2015 MRS Fall Meeting & Exhibit, Boston, Massachusetts, November 29 – December 4.
18. Liang P.P., Yu H.X. & **Xiao Y.** (2015) A paper-based device for rapid visualization of NADH based on dissolution of gold nanoparticles. *Poster presentation*, 2015 MRS Fall Meeting & Exhibit, Boston, Massachusetts, November 29 – December 4.
19. Yu H.X., Wang Z.W., Ng B., Canoura J. & **Xiao Y.** (2015) Simple, rapid and ultra-sensitive fluorescence detection of cocaine in oral fluid based on cooperative binding split aptamer. *Oral presentation*, SOFT 2015, Atlanta, Georgia, October 19 – 23.
20. Wang Z.W., Yu H.X., Ng B., Roncancio D., Canoura J. & **Xiao Y.** (2015) Amplified colorimetric detection of cocaine in oral fluid based on exonuclease-assisted aptamer strand recycling. *Poster presentation*, SOFT 2015, Atlanta, Georgia, October 19 – 23.
21. **Xiao Y.** (2015) Bringing biosensors to the bedside. *Recruitment talk*, Division of Health and Natural Sciences, Florida Memorial University, Miami, FL, February 24.



22. **Xiao Y.** (2015) Aptamer-based, exonuclease-amplified, paper device for point of collection screening of cocaine and methamphetamine in oral fluid. *Invited talk*, 2015 Forensic Science R&D Grantees Meeting, Orlando, FL, February 17.
23. **Xu X.W., Guntupalli B., Yu H.X. & Xiao Y.** (2014) Target recycling-based assay for rapid and accurate determination of DNA surface coverage on gold nanoparticles. *Oral presentation*, 2014 MRS Fall Meeting & Exhibit, Boston, Massachusetts, November 30 – December 5.
24. **Roncancio D., Wu S., Yu H.X., Xu X.W., Liu R., Debord J., Lou X.H. & Xiao Y.** (2014) A label-free aptamer-fluorophore assembly for highly sensitive and specific detection of cocaine. *Poster presentation*, 2014 MRS Fall Meeting & Exhibit, Boston, Massachusetts, November 30 – December 5.
25. **Wu S., Liang P.P., Yu H.X., Xu X.W., Liu Y., Lou X.H. & Xiao Y.** (2014) Amplified single base-pair mismatch detection *via* the aggregation of exonuclease-sheared gold nanoparticles. *Poster presentation*, 2014 MRS Fall Meeting & Exhibit, Boston, Massachusetts, November 30 – December 5.
26. **Xiao Y.** (2014) Bringing biosensors to the bedside. *Recruitment talk*, Department of Chemistry, St. Thomas University, Miami, FL, November 5.
27. **Xiao Y.** (2013) Bringing biosensors to the bedside. *Recruitment talk*, Department of Chemistry, University of Tampa, Tampa, FL, November 22.
28. **Xiao Y.** (2013) Bringing biosensors to the bedside. *Recruitment talk*, Department of Chemistry, Florida Southern College, Lakeland, FL, November 21.
29. **Guntupalli B., Liang P.P., Dai J.Y., Yang Y.H., He J., Li W.Z. & Xiao Y.** (2013) Ambient filtration method to prepare paper-based electroactive nanoporous gold thin film for detection of dopamine and serotonin. *Oral presentation*, 89<sup>th</sup> Florida Annual Meeting and Exposition. Palm Harbor, FL, May 9 – 11.
30. **Xiao Y., Dai J.Y., Paudyal J., Guntupalli B., Liang P.P., Pubillones F., Yang Y.H., Li W.Z. & Wang X.T.** (2013) Paper-based single-walled carbon nanotube thin film for catalytic detection of nicotinamide adenine dinucleotide in human blood. *Invited talk*, 89<sup>th</sup> Florida Annual Meeting and Exposition. Palm Harbor, FL, May 9 – 11.
31. **Xiao Y.** (2012) Biosensors, biotechnologies and biomaterials. The 9th International Symposium on Persistent Toxic Substances. *Oral presentation*, Miami, FL, October 23 – 27.
32. **Xiao Y.** (2011) Bringing biosensors to the bedside. *Recruitment talk*, Department of Chemistry, Barry University, Miami, FL, November 21.

## **WORK IN PROGRESS**

### **Completed papers/research in progress**

1. **Wang Z.W., Yu H.X., Roncancio D., Fu F.F., Wu Z.J. & Xiao Y.\*** (2016) Utilizing nuclease screening of ligand-aptamer complexes to enhance specificity of aptamers. *In preparation*.
2. **Guntupalli B., Dai J.Y., Paudyal J., Li W.Z. & Xiao Y.\*** (2016) Disposal paper-based SWCNT thin film for electrocatalytic detection of NADH in complex matrices for disease diagnosis and drug detection. *In preparation*.

3. Wang P., Paudyal J., Zhou F.Y. & **Xiao Y.\*** (2016) Electrocatalytic oxidation of methanol based on platinum nanoclusters decorated, carbon nanotubes functionalized paper chips. **Submitted to Anal. Chem.**
4. Yu H.X., Guntupalli B., Canoura J. & **Xiao Y.\*** (2016) Cooperative binding split aptamer based, exonuclease III-assisted target recycling for sensitive detection of small-molecule targets. **Submitted to Angew. Chem., Int. Ed.**
5. Liang P.P., Canoura J., Yu H.X. & **Xiao Y.\*** (2016) DTT-regulated, DNA-modified AuNPs for rapid Exo III-engaged colorimetric detection of DNA and small-molecule targets. **Submitted to Anal. Chem.**
6. Yu H.X., Xu X.W., Liang P.P., Loh K.Y., Guntupalli B. & **Xiao Y.\*** (2016) A broadly-applicable assay for accurately and rapidly quantifying DNA surface coverage on diverse particles. **Submitted to Chem. Sci.**
7. Xu Q., Lou X.H., Wang L., Ding X.F., Yu H.X. & **Xiao Y.** (2016) Rapid, surfactant-free and quantitative functionalization of gold nanoparticles with thiolated DNA under neutral pH and application in molecular beacon-based biosensor. **Revised for ACS Appl. Mater. Interfaces.**

## **RESEARCH FUNDING**

### **Funded research**

1. Rapid and Accurate On-Site Screening for a Broad Range of Synthetic Cathinones by Electronic Drug Analyzer Based on a Cross-Reactive Aptamer.  
National Institute of Justice (NIJ), 2016-DN-BX-0167, \$208,971  
01/01/2017 – 12/31/2017, (Role: PI)
2. Aptamer-Based, Exonuclease-Amplified, Colorimetric, Onsite Screening of Methylenedioxypyrovalerone (MDPV) and Mephedrone in Oral Fluid.  
National Institute of Health (NIH), R15DA036821, \$337,240,  
09/30/2015 – 09/29/2018, (Role: PI) (Co-PI: Bruce McCord)
3. Aptamer-Based, Exonuclease-Amplified, Paper Device for Point of Collection Screening of Cocaine and Methamphetamine in Oral Fluid.  
National Institute of Justice (NIJ), 2013-DN-BX-K032, \$352,222,  
01/01/2014 – 12/31/2016, (Role: PI) (Co-PI: Bruce McCord)

### **Grants in pending**

1. CAREER: Homogeneous Nuclease-Assisted SELEX for the Directed Evolution of Cooperative Binding Split Aptamers for Biosensor Applications.  
National Science Foundation (NSF), \$601,832, July 2016, (Role: PI)

### **Proposals submitted but not funded**

1. CAREER: Direct Evolution of Cooperative Binding Split-Aptamer-Based Biosensors through Nuclease-Assisted SELEX for Tracking and Detection of Small Molecules in Biofluids.  
National Science Foundation (NSF), \$600,211, July 2015, (Role: PI) (Recommended for funding in 2015)

2. On-Site Screening of a Class of Synthetic Cathinones by a Rapid and Specific Electronic Aptamer-Based Drug Meter.  
National Institute of Justice (NIJ), \$563,059, April 2015, (Role: PI) (Funded in 2016 after the revision and see the grant number: 2016-DN-BX-0167)
3. Aptamer-Based, Exonuclease-Amplified Detection for Simultaneous, Analysis of Cocaine and Methamphetamine at the Point-of-Care.  
National Institute of Health (NIH), \$417,679, February 2013, (Role: PI) (Funded in 2015 after the revision and see the grant number: R15DA036821)
4. Electrochemical Aptamer-Based Method for Detection of Amphetamine in Adulterated Urine Samples.  
FIU Seed Fund \$29,936, February 2013, (Role: PI)
5. SWCNT Thin-Film Integrated Electrochemical Sensor for Real-Time Detection of Small Molecule at Point-of-Care.  
National Institute of Health (NIH), \$398,750, February 2012, (Role: PI)

### **PATENT DISCLOSURES, APPLICATIONS, AND AWARDS**

1. Willner I., Pavlov V., Zayatz M., Niazov T., Shlyahovsky B., **Xiao Y.** & Buron R. "Novel sensors with nanoparticle probe". Patent No. WO2006008742.
2. Willner I., **Xiao Y.**, Pavlov V. & Niazov T. "Catalytic polynucleotide and its use for determination of analytes". Patent No. US 20070254282.
3. **Xiao Y.**, Lubin A.A. & Plaxco K.W. "Signal-on architecture for electronic oligonucleotide-based detectors". Patent No. US 20070154909.
4. Soh H.T. & **Xiao Y.** "Target detection using a single-stranded, self-complementary, triple-stem DNA probe". Patent No. US 20110256637.
5. Roncancio D., Yu H.X., Xu X.W. & **Xiao Y.** "Materials and methods for rapid and specific detection of cocaine". Patent No. US 20160131668.
6. **Xiao Y.** & Guntupalli B. "Highly conductive porous paper-based metal thin films". (US Non-Provisional Application)

### **PROFESSIONAL HONORS, PRIZES, FELLOWSHIPS**

2015 – 2016	CASE Award for Research	Florida International University, USA
1999 – 2000	Guanghua Award in excellent research	Nanjing University, China
1992 – 1994	Award for Study Excellency	Northwest University, China

### **OFFICES HELD IN PROFESSIONAL SOCIETIES**

2009 – Present	Member, American Society of Human Genetics
2008 – Present	Member, American Association for the Advancement of Science
2008 – Present	Member, Materials Research Society
2005 – Present	Member, American Chemical Society

## **OTHER PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE**

### **To FIU**

2015	Judge, FIU's Annual Scholarly Forum during Graduate Student Appreciation Week (GSAW), Florida International University, Miami, FL, April 6 – 10, 2015
2012 – 2016	Member of Faculty Mentoring Program School, School of Integrated Sciences and Humanity, FIU

### **To Department of Chemistry and Biochemistry**

2015 – 2016	Human Resources, Departmental Instrumental Facilities, and Public Relationship and Web Page Committees
2014 – 2015	Graduate Student Recruitment and Budget Committees
2013 – 2014	Graduate Student Recruitment Committee
2012 – 2013	Departmental Instrumental Facilities and Research Experience for Undergraduates (REU) Committees
2011 – 2012	Departmental Safety and Graduate Student Recruitment Committees

### **Referee for the following scientific journals**

Proceedings of the National Academy of Sciences	Chemical Communications
The Journal of the American Chemical Society	Analytical Chemistry
Angewandte Chemie International Edition	Advanced Functional Materials
Advanced Materials	Chemistry - A European Journal
Nucleic Acids Research	Biomacromolecules
Nano Letters	The Journal of Physical Chemistry
ACS Nano	RSC Advances
ACS Applied Materials & Interfaces	Biomicrofluidics
Small	Analyst
	Journal of Materials Chemistry
	Electrochemical Communications

### **LIST OF COURSES TAUGHT**

AY 2015 – 16	CHM 6990	Macromolecular Biosensors	(Fall)
	CHM 6970	Thesis Research	(Fall)
	CHM 7910	Dissertation Research	(Fall)
	CHM 7980	Ph.D. Dissertation	(Fall)
	CHM 4130	Instrumental Analysis	(Spring)
	CHM 5150	Grad Analytical Methods	(Spring)
	CHM 4910L	Undergraduate Research	(Spring)
	CHM 6970	Thesis Research	(Spring)
	CHM 7910	Dissertation Research	(Spring)
	CHM 7980	Ph.D. Dissertation	(Spring)
AY 2014 – 15	CHM 4130L	Instrumental Analysis Lab (2 labs)	(Fall)

	CHM 4130	Instrumental Analysis	(Fall)
	CHM 5150	Grad Analytical Methods	(Fall)
	CHM 7910	Dissertation Research	(Fall)
	CHM 7980	Ph.D. Dissertation	(Fall)
	CHM 4910L	Undergraduate Research	(Spring)
	CHM 7910	Dissertation Research	(Spring)
	CHM 7980	Ph.D. Dissertation	(Spring)
AY 2013 – 14	CHM 4130	Instrumental Analysis	(Fall)
	CHM 5150	Grad Analytical Methods	(Fall)
	CHM 4910L	Undergraduate Research	(Fall)
	CHM 7910	Dissertation Research	(Fall)
	CHM 4130L	Instrumental Analysis Lab (2 labs)	(Spring)
	CHM 4910L	Undergraduate Research	(Spring)
	CHM 7910	Dissertation Research	(Spring)
	CHM 7980	Ph.D. Dissertation	(Spring)
AY 2012 – 13	CHM 4130	Instrumental Analysis	(Fall)
	CHM 5150	Grad Analytical Methods	(Fall)
	CHM 4910L	Undergraduate Research	(Fall)
	CHM 7910	Dissertation Research	(Fall)
	CHM 4130L	Instrumental Analysis Lab (1 lab)	(Spring)
	CHM 4910L	Undergraduate Research	(Spring)
	CHM 7910	Dissertation Research	(Spring)
AY 2011 – 12	CHM 4130	Instrumental Analysis	(Fall)
	CHM 5150	Grad Analytical Methods	(Fall)
	CHM 4130L	Instrumental Analysis Lab (1 lab)	(Spring)
	CHM 4910L	Undergraduate Research	(Spring)
	CHM 6970	Thesis Research	(Spring)

## MENTORING

### POSTDOCTORAL FELLOWS SUPERVISED

Jianyuan Dai	Chemistry & Biochemistry, 2011 – 2013 Current position: Lecturer in College of Chemistry, Sichuan University, China
Shuo Wu	Chemistry & Biochemistry, 2012 – 2013 Current position: Associate Professor in Department of Chemistry, Dalian University of Technology, China
Xiaowen Xu	Chemistry & Biochemistry, 2013 – 2015 Current position: Assistant Research Associate in School of Chemistry and Chemical Engineering, Shangdong University, China
Zongwen Wang	Chemistry & Biochemistry, 2014 – 2015 Current position: Lecturer in Department of Plant Protection, Fujian

Po Wang  
Agriculture and Forestry University, China  
Chemistry & Biochemistry, 2014 – 2015  
Current position: Associated Professor in School of Chemistry and  
Chemical Engineering, Jiangsu Normal University, China

## **GRADUATE STUDENT MENTORING**

### **Graduated Student**

Pingping Liang  
FIU DYF for AY 2015 – 16  
Ph.D., Chemistry, 2011 – 2016 (degree awarded Summer 2016  
and recognized as FIU Worlds Ahead Graduate)  
Dissertation Title: “Gold nanoparticle-based colorimetric sensors  
for detection of DNA and small molecules”  
Current position: R&D Scientist in Fulgent Diagnostics, CA, USA

### **Current Students**

Bhargav Guntupalli	(Chemistry, Ph.D.) (FIU DYF for AY 2016 – 17)	2011 – Present
Janak Paudyal	(Chemistry, Ph.D.)	2011 – Present
Daniel Roncancio	(Chemistry, Ph.D.) (FIU McNair Graduate Research Fellow for AY 2013 – 15)	2013 – Present
Haixiang Yu	(Biochemistry, Ph.D.) (NIJ STEM Graduate Research Fellow for AY 2015 – 16)	2013 – Present
Brian Ng	(Chemistry, Ph.D.)	2015 – Present
Jerome Mulloor	(MS, M.S.F.S.)	2015 – Present

### **Dissertation or Thesis Committee**

Chao Ya	(Ph.D., Chemistry)	2011 – 2014
Diane Catlin	(M.S., M.S.F.S.)	2013 – 2016
Anupama Tuladhar	(MS, Chemistry)	2014 – 2016
Mingwei Yang	(Ph.D., Chemistry)	2013 – Present
Antonija Tangar	(Ph.D., Chemistry)	2013 – Present
Ling Wang	(Ph.D., Chemistry)	2013 – Present
Allen Gilliland	(Ph.D., Forensics)	2014 – Present
Shambu Kandel	(Ph.D., Chemistry)	2014 – Present
Samiol Azam	(Ph.D., Chemistry)	2016 – Present
Jacob Porter	(Ph.D., Chemistry)	2015 – present
Robert La Pierre	(M.S., Chemistry)	2014 – Present
Stephanie Delabat	(M.S., M.S.F.S.)	2014 – Present

## **UNDERGRADUATE STUDENT RESEARCH MENTORING**

### **Students Graduated**

Hien Nguyen	(FIU, CHM 4190L)	2011 – 2012
Daniel Roncancio	(FIU, CHM 4190L)	2011 – 2013
Felipe Pubillones	(FIU, CHM 4190L & 4191L)	2012 – 2013
Jobin Alishahi	(FIU, CHM 4190L)	2012 – 2013
Carolina De Leon	(FIU, CHM 4190L)	2012 – 2013

Christian Afanador	(FIU, CHM 4190L)	2012 – 2013
Diana Asensio	(FIU, CHM 4190L)	2012 – 2013
Joshua Montalvan	(FIU, CHM 4190L)	2012 – 2013
Sandor Toledo	(FIU, CHM 4190L)	2012 – 2013
David Ramirez	(FIU, CHM 4190L & 4191L)	2013 – 2014
Joshua Debord	(FIU, CHM 4190L & 4191L)	2013 – 2014
Shirley Carles	(FIU, CHM 4190L)	2014
Stefanie Magda	(FIU, CHM 4190L)	2014 – 2015
Linda Robayo	(FIU, Exchange Student)	2014
Brian Ng	(FIU, CHM 4190L & 4191L)	2013 – 2015
Luis Rodriguez	(B.S. in John Hopkins University)	Summer 2015
Juan Canoura	(FIU, CHM 4190L & 4191L)	2014 – 2016
Evelio Feito	(FIU, CHM 4190L)	2016
Juanpablo Olguin	(FIU, CHM 4190L)	2016

### **Current Students**

Juanpablo Olguin	(FIU, CHM4191L)	2016
Camila Jaramillo	(FIU)	2016

### **FIU REU Students**

Danielle Francis	(REU student)	Summer 2013
Aurora Burkus-Matesevac	(REU student)	Summer 2016

### **FIU McNair Undergraduate Fellows**

Hien Nguyen	(Undergraduate Summer Research)	2012
Daniel Roncancio	(Undergraduate Summer Research)	2013
Juan Canoura	(Undergraduate Summer Research)	2015
Cindy Ly	(Undergraduate Summer Research)	2016
Camila Jaramillo	(Undergraduate Summer Research)	2016

### **HIGH SCHOOL STUDENT RESEARCH MENTORING**

Sean Becker	(Ransom Everglades High School)	Summer 2016
-------------	---------------------------------	-------------