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# Marcel A. Roberts

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**OBJECTIVE:** To obtain a position that will allow me to utilize and implement techniques and approaches that involves my broad background experience in chemical biology and material sciences, as well as learn new and novel methods.

**HIGHLIGHTS:**

- Extensive experience in chemical/physical biology and nanotechnology
  - Emphasis on nanofabrication of gold arrays and nanoelectrodes, protein and DNA detection, UV/Vis and fluorescence spectroscopy, electrochemistry, solid phase peptide synthesis of fluorescent dye/ferrocene modified DNA/protein binding peptides, Surface modification chemistry, polymer chemistry, antibody reactions, explosives synthesis and detection, fingerprint enhancement and detection
- Spearheaded methodology and assay development objectives in the areas of DNA and Prostate Specific Antigen detection using catalytic electrochemical assays on the macro, micro and nanoscale and supervised/advised graduate and undergraduate researchers on their individual biosensing and bioanalytical projects. Spearhead digital microfluidic platform.
- Devised a collaborative project involving peptide synthesis, nanofabrication, electrochemistry and biomolecule detection.
- Proficient with Surface Plasmon reflection imaging devices, Quartz Crystal Microbalances, the Fluorolog Tau-3 Fluorometer, Varian FT-IR (Fourier Transform Infrared) Spectrometer, Circular Dichroism and UV-Visible spectrometers, Gas and high performance liquid chromatography, Cell culture equipment, Preparative centrifuges, Ultrahigh vacuum apparatus, Applied Biosystems DNA synthesizers, Potentiostats for electrochemical analysis, Scanning Electron Microscopes, Tunneling Electron Microscopes, Plasma etchers.
- Course Coordinator for forensic science for non-scientists.

**EDUCATION:**

2002 - 2007 Boston College Chestnut Hill, MA  
Ph.D. Chemistry, 11/07  
Thesis: Spectroscopic and electrochemical monitoring of biomarkers  
**Advisor:** Professor Shana O. Kelley

1998 - 2002 CUNY-John Jay College of Criminal Justice New York, NY  
B.S. - Forensic Science. Magna Cum Laude.

1994 – 1998 Lycée International de Ferney-Voltaire Ain, France  
French Baccalaureate- Serie S  
British A-Levels

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**RESEARCH EXPERIENCE:**

2009 - CUNY-John Jay College of Criminal Justice New York, NY

- Assistant Professor
- Development of novel electrochemical and spectroscopic device to detect biomolecules in sweat.

2007 - 2009 McGill University-Biomedical Engineering Department Montreal , QC

- Primary investigator on development digital microfluidic platform for the detection of biomolecule detection using SPR

2007 - 2008 University of Toronto – Pharmacy Department Toronto, ON  
*Graduate Research Assistant*

- Moved and organized a chemical biology lab.
- Assisted in the design, creation and investigation of nanostructured 3-D electrode chips for applications in biosensing.

2002 – 2007 Boston College – Chemistry Department Chestnut Hill, MA  
*Graduate Research Assistant/Teaching Assistant*

- Studied DNA mediated electron transfer in abasic DNA.
- Investigated the spectroscopic properties of reactive oxygen producing cellular probing peptidconjugates.
- Designed and investigated DNA and Prostate Specific Antigen detection on nanoscaled electrodes using an electrocatalytic assay.

05/02-07/02 Columbia University Medical Center New York, NY  
*Intern*

- Studied the effect of DNA methylation on tumor suppressor genes.

1999-2002 CUNY-John Jay College of Criminal Justice New York, NY  
*Undergraduate Student*

- Investigated the use of *H. Vulgare* (Barley) in the phytoremediation of Cadmium.

**PUBLICATIONS:**

- **Roberts, M. A.;** Kelley, S. O. "Ultrasensitive Detection of Enzymatic Activity

with Nanowire Electrodes" *J. Am. Chem Soc.* **2007**; 129(37); 11356-11357.

- Carreon, J. R.; **Roberts, M. A.**; Wittenhagen, L. M.; Kelley, S. O. "Synthesis, Characterization, and Cellular Uptake of DNA-Binding Rose Bengal Peptidoconjugates" *Org. Lett.*; (Communication); **2005**; 7(1); 99-102.
- Lapierre-Devlin, M. A.; Asher, C. L.; Taft, B. J.; Gasparac, R.; **Roberts, M. A.**; Kelley, S. O. "Amplified Electrocatalysis at DNA-Modified Nanowires" *Nano Lett.*; (Communication); **2005**; 5(6); 1051-1055.

### **PRESENTATIONS and KEY AWARDS:**

- **Marcel A. Roberts**, Xiaopeng Miao, Chad Dooley, Brad J. Taft, Melissa A. Lapierre-Devlin and Shana O. Kelley.; Kelley, S.O. "Nano-scale structures for ultrasensitive biosensing." The Dartmouth Nanomaterial Symposium VI: Dartmouth, NH. October 2005. (poster)
- **Marcel Roberts**, Bladimir Ovando. McNair Fellow, CSTEP NY Research Award, May 2002.

### **LANGUAGES and INTERNATIONAL EXPERIENCES:**

- Lived in France 17 years. Fluent in French, English, very familiar with Italian, familiar with Spanish.

### **REFERENCES:**

Dr Angelique Corthals  
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