Working for a State Government Laboratory

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Dr. Crosswhite's Background

EDUCATION

2009-2012 **Ph.D. Analytical Chemistry**, The Florida State University, Tallahassee, FL.

2005-2009 **M.S. Analytical Chemistry**, The Florida State University, Tallahassee, FL.

2001-2005 **B.S. Chemistry**, University of North Carolina, Greensboro, NC.

PROFESSIONAL EXPERIENCE

2012-present **Environmental Scientist Specialist III**, Florida Department of Agriculture and Consumer Services (FDACS), Tallahassee, Florida, USA.

Dr. Aldeek's Background

EDUCATION

2007-2010 **Ph.D. Materials Science**, Henri Poincaré University, Nancy, France.
Title: Synthesis and functionalization of fluorescent nanocrystals (Quantum Dots) for imaging and characterization of hydrophobic/hydrophilic properties of bacterial biofilms.
Advisors: Prof. Raphael Schneider and Prof. Jean-Claude Block.

2005-2007 **M.S. Molecular and Supramolecular Chemistry**, Louis Pasteur University, Strasbourg, France. Title: Formation of molecular networks by self-assembly of tectons.
Advisor: Dr. Abdelaziz Jouaiti.

2001-2005 **B.S. Chemistry**, Louis Pasteur University, Strasbourg, France.

PROFESSIONAL EXPERIENCE

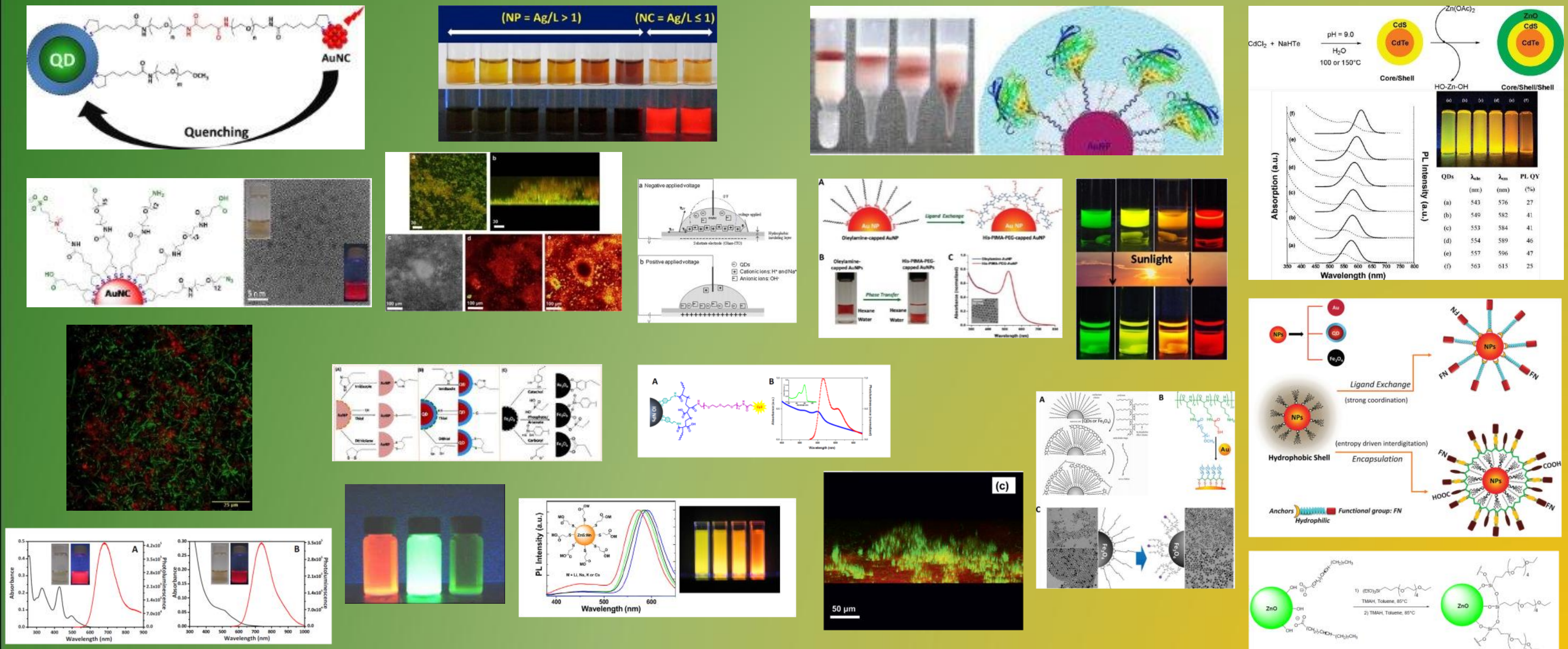
2014-present **Environmental Scientist Specialist III**, Florida Department of Agriculture and Consumer Services (FDACS), Tallahassee, Florida, USA.

2012-2014 **Postdoctoral Research Associate**, Florida State University, Department of Chemistry and Biochemistry, Tallahassee, Florida, USA.

2011-2012 **Postdoctoral research, Henri Poincaré University**, Laboratoire Réactions et Génie des Procédés (LRGP), Nancy, France.

Dr. Aldeek's Background

I was following an interdisciplinary research program that aims at developing the technology of chemically synthesized inorganic nanocrystals. This included challenges in making new compositions of nanocrystals and multifunctional ligands, with the ultimate goal of incorporating the nanocrystals into hybrid organic-inorganic devices and biological systems.



Design, Synthesis, Coordinating Ligands, Nanotechnology, Nanoparticles Growth, Surface Chemistry, Functionalization, Bio-Conjugation, Photophysic, Spectroscopy, Structural and Optical Characterizations, Bio-Sensing and -Imaging Applications.

Dr. Aldeek's Background

Synthesis, Characterization and Biological Applications of Water-Soluble ZnO Quantum Dots

The influence of capping thioalkyl acid on the growth and photoluminescence efficiency of CdTe and CdSe quantum dots

Glycosylated Quantum Dots for the Selective Labelling of *Kluyveromyces bulgaricus* and *Saccharomyces cerevisiae* Yeast Strains

Aqueous dispersions of core/shell CdSe/CdS quantum dots as nanofluids for electrowetting

Patterned Hydrophobic Domains in the Exopolymer Matrix of *Shewanella oneidensis* MR-1 Biofilms

Surface-engineered quantum dots for the labeling of hydrophobic microdomains in bacterial biofilms

Enhanced Optical Properties of Core/Shell/Shell CdTe/CdS/ZnO Quantum Dots Prepared in Aqueous Solution

Enhanced Photostability from CdSe(S)/ZnO Core/Shell Quantum Dots and Their Use in Biolabeling

Aqueous route to color-tunable Mn-doped ZnS quantum dots

Nancy-Université

Ph.D. Research: 2008-2011

Henri Poincare University, Nancy, France

A multifunctional amphiphilic polymer as a platform for surface-functionalizing metallic and other inorganic nanostructures

Strategies for interfacing inorganic nanocrystals with biological systems based on polymer-coating

UV and Sunlight Driven Photoligation of Quantum Dots: Understanding the Photochemical Transformation of the Ligands

Understanding the Self-Assembly of Proteins onto Gold Nanoparticles and Quantum Dots Driven by Metal-Histidine Coordination

POLYMERS FOR SURFACE-FUNCTIONALIZATION AND BIOCOMPATIBILITY OF INORGANIC NANOCRYSTALS

Quenching of Quantum Dot Emission by Fluorescent Gold Clusters: What It Does and Does Not Share with the Förster Formalism

Growth of *In Situ* Functionalized Luminescent Silver Nanoclusters by Direct Reduction and Size Focusing

Growth of Highly Fluorescent Polyethylene Glycol- and Zwitterion-Functionalized Gold Nanoclusters

One phase growth of *in-situ* functionalized gold and silver nanoparticles and luminescent nanoclusters

Florida State University 1851

Postdoctoral Research: 2012-2014

Florida State University, Tallahassee, FL, USA

What do I want to do now?

How can I be happy in both my professional and private life?

What can I do?

How will my professional career advance?

Will I continue to grow intellectually?

What should I offer to my family after all these years doing postgraduate studies?

What do I deserve?

Who can help me to get the dream job?

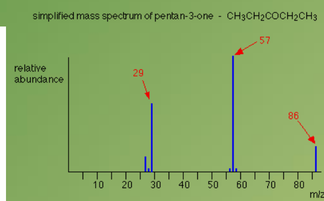
Am I mentally strong enough for academia

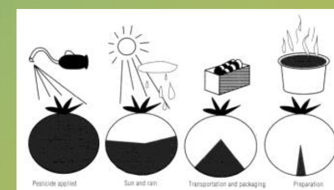
Can I be useful outside of my specialty?

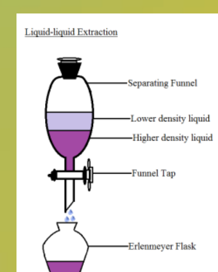
Division of Food Safety

Chemical Residue Labs

Chemical Residue Laboratory , FDACS







Overview of the CR Laboratory

- Our lab started in early 1960 and is located in Tallahassee
- 33 lab employees: Chemists and Lab Technicians (prepare samples, analyze samples, document and report conclusions)
- 8 Field Inspectors, collect samples and ship to the laboratory for testing and analysis. Approx. 3000 samples are analyzed per year.

Our mission is to protect Florida's food supply

Where do the samples come from?

- **Within FDACS:**
  - Division of Food Safety
  - Agriculture Environmental Services
  - FDACS samplers
- **Within Florida:**
  - Department of Health
  - Law Enforcement
- **Federal Agencies:**
  - FERN: FDA and USDA
  - FDA: contract

Consumer Protection Testing

- **Authenticity Claims:**

Fruits Juices

Honey

Vanilla Species (Fish and Meat)

- **Nutritional Claims:**

No, Low, Reduced, High, Total fat, Trans Fat,

Sugars, Protein, Calories, Sodium, Calcium, Iron, Vitamins A & C,

- **Label Review**

Food Safety Testing

- **Decomposition:** Indole, Histamine, biogenic Amines (putrescine,cadaverine, spermidine)
- **Toxins:** Aflatoxin, Patulin, Solanine
- **Metals:** Mercury, Lead, Cadmium, Tin
- **Allergens:** Egg, Milk, Soy, Wheat, Peanuts, Tree Nuts
- **Dietary Supplements:** Ephedrines, Caffeine
- **Preservatives:** Sulfites, Nitrites, Sorbate

Food Safety Testing cont'd

- **Food Colors:**

- Blue1,2
- Red 3,40
- Yellow 5,6

- **Vanilla Flavoring:**

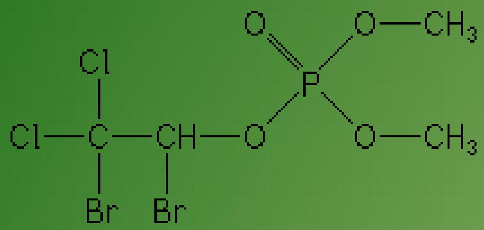
- Coumarin

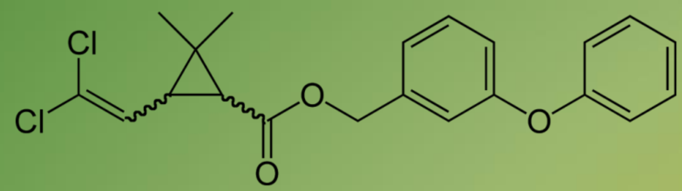
- **Foreign Material:**

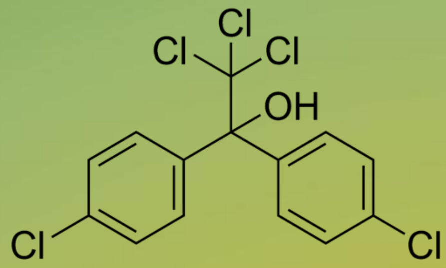
- Insects
- Feces
- Hair

Protecting Our Food Supply

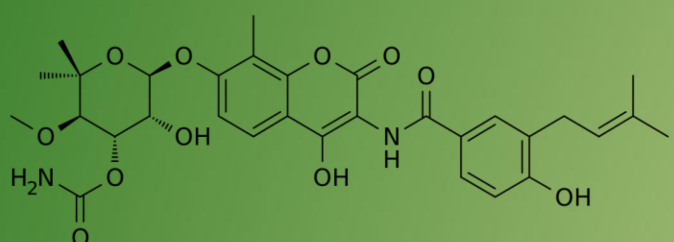
- **Pesticides**

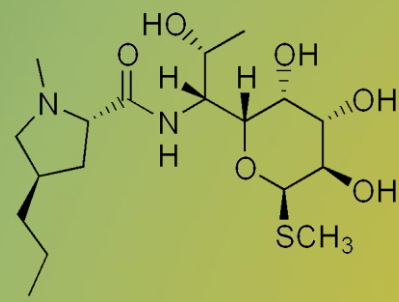


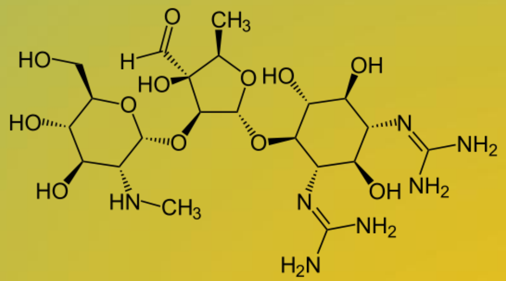




- **Antibiotics**







- **Toxic chemicals**

Counter Terrorism

- **Food Emergency Response Network (FDA)**

- **In response to 911**

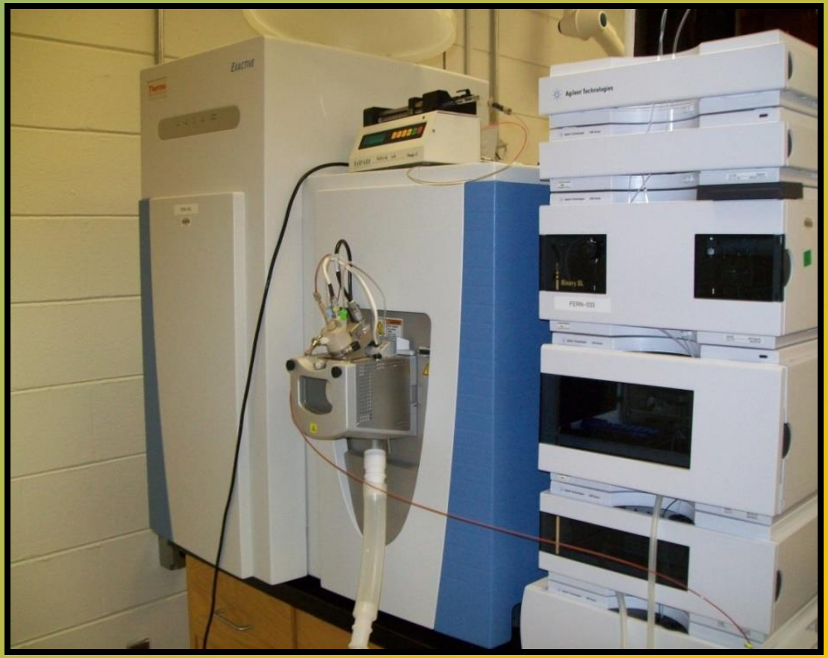
- **Testing for Toxic Chemicals in Food Supplies**
  - **Cyanides**
  - **Ricin**
  - **Many other toxins**

Analytes Extraction

- **Homogenize**
- **Weighing sub-sample**
- **Extract Chemicals**
- **Dispersive Extraction – "Clean Sample"**

The Instruments & Analysis

- **Gas Chromatography**
- **Liquid Chromatography**
- **High Resolution Mass Spectrometry**



New Skills developed at FDACS

- Developed new extraction methods to screen for antibiotic residues and various adulterants in a wide range of matrices

- Optimized instruments to enhance capabilities of extraction methods used in our laboratory

- Trained and supervised fellow chemists to ensure advanced extraction methods were accurately performed

- Collaborated with other agencies to work on projects of national interest

- Taught short courses on challenges and successes of chemical residue extraction in food matrices

- Presented findings on projects developed in our laboratory at conferences with international audiences

Achievement at FDACS

Journal of Agricultural and Food Chemistry

Finally, my first paper as a leader (Corresponding Author)

LC-MS/MS Method for Determination and Quantification of Penicillin G and its Metabolites in Citrus Fruits Infected with Huanglongbing

Journal:	*Journal of Agricultural and Food Chemistry*
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Complete List of Authors:	Aldeek, Fadi; Florida Department of Agriculture and Consumer Services, Division of Food Safety Rosana, Michael; Florida Department of Agriculture and Consumer Services, Division of Food Safety Hamilton, Zaid; Florida Department of Agriculture and Consumer Services, Division of Food Safety Crosswhite, Mark; Florida Department of Agriculture and Consumer Services, Division of Food Safety Burrows, Casey; Florida Department of Agriculture and Consumer Services, Division of Food Safety Singh, Sonal; Florida Department of Agriculture and Consumer Services, Division of Food Safety Gerard, Ghislain; Florida Department of Agriculture and Consumer

Division of Food Safety, Chemical Residues Lab at FDACS

Thank You