Albany State University

Faculty Capabilities and Interests

Name: Uzoma A. Okafor

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Discipline: Forensic Science

Subdiscipline(s): Biochemistry and Protein Biotechnology

Areas of Research Interests: Protein Biochemistry, Pharmacognosy, Forensic Toxicology, Forensic Serology, Oncology,

Skills: Solid phase extractions, protein isolation and purification, Real time Polymerase chain reaction, Fourier transformed infra-red spectroscopy analysis, GC-MS, Genetic mapper analysis, Forensic evidence analysis.

Research Summary *(current, performed in the past 5 year; 300 words or less)*

Forensic Science: Detection/characterization of explosives

Explosives are devices composed of a fuel, an oxidizing agent and other ingredients commonly used in terrorist attack throughout the world. Characterization and identification of the explosives are gaining importance in the light of increased terrorist threat and for forensic applications. This analysis explores the use of instrumental techniques like Raman and Infrared Spectroscopy or Time of Flight Secondary Ion Mass Spectroscopy (ToF-SIMS) or X-ray Photoelectron Spectroscopy (XPS) for the identification of both organic and inorganic components in the commonly used explosive mixtures like C4, Amatol and Baratol. XPS can reveal unique information on oxidation state and chemical bonding that is unavailable from other techniques. Image mapping of the components can also be possible in these techniques which gives information of the compositional variations between explosives of similar nature. This research work examines the compositional variations of explosives commonly used for terrorist attacks.

Demographic studies of Marijuana and Other Clandestine drugs

Cannabis usage for its psychoactive effects has been with man for centuries. Knowing the type of polymorphism in THCA synthase gene will enhance the identification, location characterization in distribution and plantation of Cannabis Sativa within this geographical zone.

Biochemistry: Oncology and Biofuel

My research area is gradually drifting to more of oncology related research, which involved the evaluation of pharmacological aspects of plants and fungi extracts on cancer cells line.

My previous research was focused on plant cell wall degrading enzymes. This research involves the isolation and characterization of the following enzymes-Cellulases, Xylanases, Pectinases and Ligninase from fungi using ligninocellulosic wastes as enzyme inducers. This research also investigated the potential of bioconversion of agricultural was to biofuel and animal feeds. Various methods of fermentation, purification and molecular biology were used.

Keywords *(5 maximum):* Fungi, Enzymes, Ligninocellulosic, Oncology, Explosives,