



UNIVERSITY OF SOUTH ALABAMA

Department of Chemistry Presents Seminar Series Speaker

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Ion Mobility-Mass Spectrometry: Applications to Performance-Enhancing Drugs (PEDs)

Performance-enhancing drugs (PEDs), especially the most prominent class of anabolic-androgenic steroids, are often abused to add strength and muscle mass/definition. These gains can provide an unfair advantage in sport competition and also lead to significant health damage including heart attack, stroke, and kidney failure. Many of these substances are banned by sport organizations, especially by the World Anti-Doping Agency (WADA) who publishes an annual “Prohibited Substances List” that outlines several banned categories of APEDs and associated doping methods (i.e., blood manipulation, gene and cell doping, etc.). Testing for use of known APEDs is most commonly performed using gas or liquid chromatography coupled with tandem mass spectrometry (MS/MS) due to its superior sensitivity and ability to analyze complex biological mixtures such as urine or blood plasma. These methods focus on a strictly targeted approach for known APEDs, such as those explicitly banned by the DEA and WADA. Unfortunately, clandestine development and manufacture of novel or “designer” steroids and the proliferation of the largely unregulated nutritional supplement market have prompted a significant increase in the prevalence of new and unknown substances. As such, there is an urgent need to expand the current analytical repertoire to allow for confident identification of true unknowns and their biological metabolites/conjugates. This presentation will focus on the utility of ion mobility spectrometry (IMS), a gas-phase structure-based separation technique capable of providing more structural information for unknown compounds and differentiation of stereochemical differences.

Friday, February 5, 2021, 12:20 pm

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