

Chemistry for Sustainable Biomaterials, Health, and Environment

Research Areas:

- Biosensors for medical applications
- Biomarkers for traumatic brain injury (TBI), seed quality, environmental stress, etc.
- Biofuels, biopolymers & other bio-based materials from renewable bioresources
- Environmental pollution monitoring & remediation
- Advanced analytical method & instrument development
- Supercritical fluid-based reaction, extraction & chromatography
- Waste treatment & recycling technology

Instruments: GC, GC-MS, HPLC, LC-MS, IC, SFE/SFC, SEC, CE, FFF, AA, ICPMS, UV/Vis, Fluorescence, FTIR, TGA, NMR, Microplate, PSA, SEM, TEM, AFM, ELISA, Confocal microscope

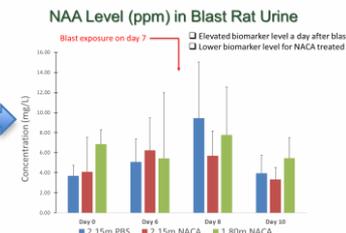
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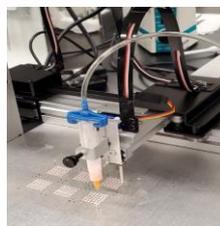
Funding: NIH, USDA, DOE, EPA, DOD, NSF, NASA, MSMC, USB, USGS, MoLSRB, MoDNR, Univ. & Industries

Antioxidant Therapy and Biomarkers for Blast-Induced TBI



Smart Oxygen Sensor Bandage

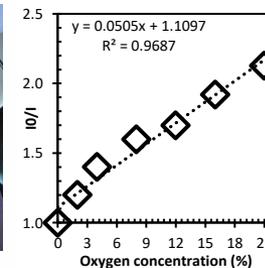
Sensor ink print



Sensor patch on arm



Smart phone readout



Recognitions:

- Total \$6 million research support from federal, state agencies and industries
- 4 awards for excellence in teaching and research in analytical and environmental chemistry
- 70 publications
- Patents: US 6,939,693; US 2005009158; US 6,800,318; US 6,793,951; US 6,547,987; US 6,605,590; US 6,342,651