Savannah River National Laboratory®

OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

Research and Technology Recognition Reception

An Evening of Celebration

October 24, 2019
Rose Hill
Aiken, SC

WE PROTECT THE NATION

Laboratory Director's Award for Early Career Exceptional Achievement

David Weir
Science & Technology

George Larsen
National Security

Adam Schnell
National Security

James "Connor" Nicholson
National Security

Amanda Houk
National Security

WE PROTECT THE NATION

Laboratory Director's Award for Early Career Exceptional Achievement

Jonathan Christian
Chemical & Environmental Science

Donnie Benza
Science & Technology

Tyler Chavous
Science & Technology

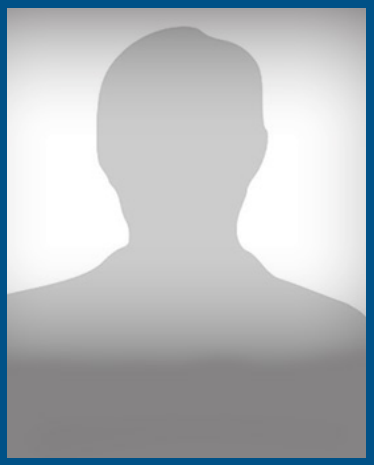
Wes Woodham
Chemical & Environmental Science

Jordan Bassett
Operations & Facilities

WE PROTECT THE NATION

Laboratory Director's Award for Exceptional Scientific & Engineering Achievement

Roderick Fuentes
Energy Materials Science



David Martinez
National Security

Wes Woodham
Chemical & Environmental Science

WE PROTECT THE NATION

Laboratory Director's Award for Exceptional Scientific & Engineering Achievement

Dennis Vinson
Nuclear Materials Management

Carol Kestin
National Security

Mike Stone
Chemical & Environmental Science

David Immel
Science & Technology

WE PROTECT THE NATION

Laboratory Director's Award for Exceptional Scientific & Engineering Achievement

Matthew Nelson
Science & Technology

Bob Pierce
Chemical & Environmental Science

Charles Vaughn
Operations & Facilities

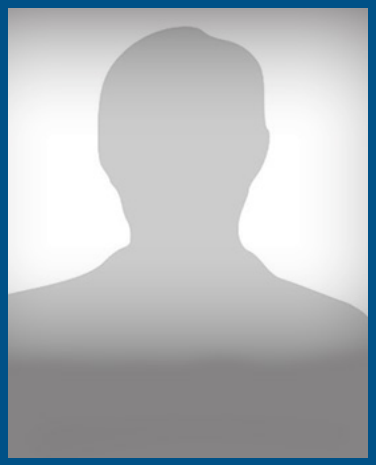
Steven Chiswell
National Security

Laboratory Director's Award for Exceptional Scientific & Engineering Achievement

Michael Morgan
Energy Material Science

Timothy Aucott
Science & Technology

Devon McClane
Weapons Production Technology



Taylor Smith
National Security

WE PROTECT THE NATION

Donald A. Orth Lifetime Award of Merit - 2018

Doug Hunter

Doug Hunter

Doug Hunter, winner of the 2018 Donald Orth Lifetime Achievement Award, the highest distinction given by SRNL to recognize the ideals of technical excellence and leadership.

Donald A. Orth Lifetime Award of Merit - 2019

Christine Langton

Christine Langton

Christine Langton, winner of the 2019 Donald Orth Lifetime Achievement Award, the highest distinction given by SRNL to recognize the ideals of technical excellence and leadership.

Laboratory Director's Awards for Challenging the Current Status

Catherine Housley

Catherine Housley

Individual that developed an idea and supported implementation that challenged the current way of doing business and increased efficiency or reduced costs to enable the advancement of the laboratory's scientific and engineering mission.

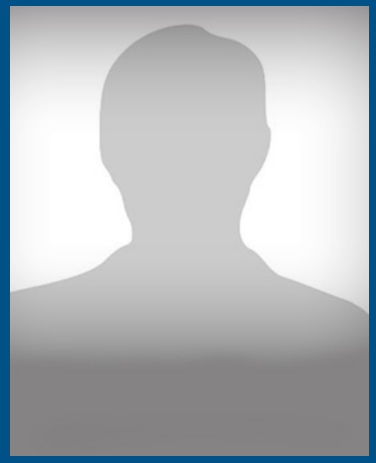
Laboratory Director's Awards for Program/Project Leadership

David Best

David Best

Individual that demonstrated significant leadership of a program, project, task that achieved stated objective/customer requirements or advanced scientific knowledge and engaged a multi-discipline or cross organization team.

Laboratory Director's Award for Teamwork



Charles James
Energy Materials Science

Robert Pierce
Chemical & Environmental Science

Patrick Westover
Operations & Facilities

Tam Truong
Energy Materials Science

Laboratory Director's Award for Teamwork

Robert Lascola
Science & Technology

Marissa Reigel
Energy Materials Science

Brenda Garcia-Diaz
Energy Materials Science

Greg Chandler
Nuclear Materials Management

Laboratory Director's Award for Safety/Operational Excellence

Josie Fraley

Josie Fraley

Individual that enthusiastically focused on safely and operational excellence through lab wide activities or focused improvement within their organization.

Laboratory Director's Award for LDRD Most Valuable Project

Simona Murph

Simona Murph

LDRD Project: "Magnetically induced heat generation for controlled hydrogen isotope release from hydrides."

The project looks at new technologies for heating nanoparticles that are rich in hydrogen. The process is faster than current conventional heating strategies, localizes the heating on nanoparticles embedded in a solid matrix, and can reduce the demand for heat energy on the environment.

ANS Technical Achievement Award

Si-Young Lee

Si-Young Lee

Fellows

Elizabeth Hoffman
ASM International

Thong Hang
American Institute of Chemical Engineers

Patents

Eliel Villa-Aleman, William A. Spencer

Patent # 10,126,231 B2

High Speed Spectroscopy Using Temporal Positioned Optical Fibers with an Optical Scanner Mirror

A process for examining spectral data over the course of a high-speed event. The systems and methods can enable observation of the spectral evolution of a transient phenomenon into segment intervals on the order of, milliseconds or microseconds.

Patents

Ragaiy Zidan, Patrick A. Ward

Patent # 10,138,122 B2

Mechanochemical Solid/Liquid Reaction in Formation of Alane

This method drives the alane producing chemical reaction by a mechanical energy source such as a ball mill and includes stabilization of the product with solvent. This method allows alane to be made from less expensive precursors than existing methods.

Patents

David P. Diprete, Tad S. Whiteside, Donald J. Pak, Timothy J. Aucott, Aexander D. Brand, Teresa P. Eddy, Karen M. Vangelas

Patent # 10,145,965 B1

Quantitative Radioactivity Monitor for Assays of Wildlife

A field-deployable detection system and associated QA program was designed and successfully deployed to rapidly quantify Cesium-137 levels in various size and species of harvested wildlife to ensure hunter's radiological dose levels remain below programmatic limits.

Patents

Matthew D. Folsom, Klaehn W. Burkes

Patent # 10,151,788 B2

Autonomously Powered Inductively Coupled Time Domain Reflectometer Sensor Device

A sensor that, unlike current technologies, can be attached to live power lines, is simple to install by standard linemen, and self-locates via GPS.

Patents

Patrick E. O'Rourke, Robert L. Lascola, David Immel, Edward A. Kyser III, Jean R. Plummer

Patent # 10,151,633 B2

High Accuracy Absorbance Spectrophotometers

Spectrophotometers and spectroscopy processes are described that can provide for in-line calibration at every spectral acquisition as well as for continuous response correction during sample processing. The spectrophotometers include multiple polychromatic light sources that include characteristic emission spectra for use as an internal wavelength drift calibration system that is independent of environmental factors.

Patents

Aaron L. Washington III, Michael G. Serrato, Joseph A. Teprovich

Patent # 10,157,689 B2

Reinforced Radiological Containment Bag

Radiological containment bags for use in storing alpha particle emitting waste are described. The radiological containment bags are formed of a multilayer film with an inner layer of the bag containing a sacrificial layer embedded with highly electron dense material that prevent alpha degradation in the exterior polymer layer.

Patents

Charles E. Turick, Charles E. Milliken, Hector Colon-Mercado

Patent # 10,234,376 B2

Non-contact Monitoring of Biofilms and Corrosion on Submerged Surfaces with Electrochemical Impedance Spectroscopy

A unique process for monitoring microorganisms on a surface. A flat, patterned sensing electrode can be positioned proximate to a surface in non-contact relationship with the surface.

Patents

Michael L. Restivo, Kenneth J. Imrich, Samuel D. Fink, Mark R. Duignan

Patent # 10,274,462 B2

Device for Measuring Deterioration in Equipment

A novel device for improving the accuracy and precision of measuring equipment changes due to corrosion, erosion, build-up of material, and combinations thereof. Increased control over the placement and removal of a coupon within the equipment is provided.

Patents

Xin Xiao

Patent # 10,322,405 B2

Highly Dispersed Metal Catalyst and Related Methods

A process to form a single-atom catalyst structure on a relatively large surface area such that all of the catalyst is available to react with available reactive molecules, without any inefficiency which may result from catalyst stacking or crystallite formation.

Patents

Aaron L. Washington II, James C. Nicholson

Patent # 10,340,049 B2

Alpha/Beta Radiation Shielding Materials

A flexible and transportable alpha/beta radiation containment materials directly embedded into multiple substrates that exhibit increased resistance to radiological degradation events, alpha and beta particle emission, and may signal effects of degradation prior to compromise of the containment field of the container.

Patents

Gerald C Blount, Maximillian B. Gorensek, Luther L. Hamm

Patent # 9,868,084 B2

Mass Transfer Apparatus and Method for Separation of Gases

A mass transfer apparatus and method for separation of gases that are more cost-effective, require lower energy input, and have greater geographic placement potential than conventional apparatuses and methods for recovery of gases such as carbon dioxide.

Phillip M. Almond, William E. Daniel, Tracy S. Rudisill

Patent # 9,896,738 B2

Process for Dissolving Aluminum for Recovering Nuclear Fuel

A process for controlling the dissolution of metal, such as aluminum, in an acid bath using a catalyst was developed by SRNL. In order to control the rate of dissolution and/or the amount of gas evolved during the process, an iron source is added to the acid. The process can be used to dissolve aluminum contained in spent fuel assemblies for recovering nuclear fuel, such as uranium.

Patents

Jody R. Coleman, Eduardo B. Farfan

Patent # 9,927,533 B2

Instrument for Assaying Radiation

Radiation Assaying Instrument employing a unique layered collimator designed to enhance radiation detector sensitivity and provide for two fields of view within a single collimator. This dual focus collimator design provides a wide view for a panoramic analysis while an inner focuser allows for a finer discrimination within a nearer smaller field of view.

Patents

Robin L. Brigmon, Mark T. Kingsley

Patent # 9,933,407 B2

Water Cooling Towers and Other Man-made Aquatic Systems as Environmental Collection Systems for Agents of Concern

Development of an apparatus and process to use existing man-made water sources such as cooling towers, fountains, and artificial waterfalls as collection agents to detect biological, chemical, and radiological agents such as those encompassed in the field of Weapons of Mass Effects (WME).

Patents

Ragaiy Zidan, Joseph A. Teprovich Jr., Hector R. Colon-Mercado

Patent # 9,959,949 B2

Solid State Electrolyte Composites based on Complex Hydrides and Metal Doped Fullerenes/Fulleranes for Batteries and Electrochemical Applications

A solid-state electrolyte composite that is made by solvent-assisted mixing of a metal hydride with carbon nanomaterial. This material has high ionic conductivity and low electrical conductivity as well as a large electrochemical operating window that will allow for the use in high capacity batteries. This system is unique in that it forms a metal intercalated polymerized C60 material. It is the formation of this polymeric structure that facilitates the enhanced ionic mobility of the system.

Patents

Jody R. Coleman, Richard W. Poland

Patent # 9,961,018 B2

Authenticated Sensor Interface Device

The Authenticated Sensor Interface Device is an electronic solution for the secure storage and transmission of data and the protection of sensors, components, and networks. A primary module collects data from the sensor, encrypts and authenticates the data, and transfers the data to several segregated and isolated data paths. Network isolation is provided through optoisolators configured to provide one-way transmission of encrypted data.

Patents

Simona E. Hunyadi Murph, George K Larsen III

Patent # 10,016,745 B2

Multifunctional Nanomaterials and Methods of Photothermal Heating and Catalysis Using the Same

The present invention is directed to multifunctional nanomaterials for photothermal heating and catalytic applications. The present patent discloses a method of photothermally heating a solution. The present method also discloses a method of catalyzing a reaction. Both methods require a step of exposing a solution to at least one wavelength of the electromagnetic spectrum. A gold-iron oxide nanomaterial comprising an iron oxide substrate and discrete gold nanoparticles deposited on the substrate is also disclosed

David R. Dixon, Tommy D. Gleaton

Patent # 10,029,246 B1

Method of Cleaning Diesel Particulate Filter

The novel method requires a step of contacting the diesel particulate filter with a cleaning composition containing one or more fatty acids or a derivative thereof.

Patents

Joshua T. Hewitt, Gregory Hall, Charles R. Shick, Jr.

Patent # 10,056,218 B1

Graphene/Graphite-Based Filament for Thermal Ionization

A system for thermal ionization of a sample and formation of an ion beam. The systems incorporate a thermal ionization filament that is formed of a graphene-based material such as graphite, graphene, graphene oxide, reduced graphene oxide or combinations thereof.

Kenneth M. Gibbs, Monica H Phillips

Patent # 10,070,072 B2

System and Method for Detecting High-Energy Photons

A system for detecting high-energy photons includes a pixelated image detector exposed to visible light and high-energy photons, and the pixelated image detector generates one or more images from the exposure to the visible light and high-energy photons. A method for detecting high-energy photons includes exposing a pixelated image detector to visible light and high-energy photons and discriminating between the visible light that interacts with the pixelated image detector and the high-energy photons that interact with the pixelated image detector.

Patents

Joseph V. Cordaro, John S. Bellamy, Davis J. Shull, Daniel R. Leduc

AU Patent # 2015219296

Inherently Safe Passive Gas Monitoring System

This method is directed to gas monitoring systems that use inductive power transfer to safely power an electrically passive device included within a nuclear material storage container.

Patents

John T. Bobbitt III

Patent # 10,085,348 B2

Rapid Prototype Extruded Conductive Pathways

A process of producing electrically conductive pathways within additively manufactured parts and similar parts made by plastic extrusion nozzles. The process allows for a three-dimensional part having both conductive and non-conductive portions and allows for such parts to be manufactured in a single production step.

Patents

Xin Xiao

Patent # 10,381,121 B2

Decontamination of Tritiated Water

A novel method used for the separation of tritium from an aqueous stream. This method is used for removal and recovery of tritium from tritium-contaminated water.

Patents

Xin Xiao, Anthony B. Thompson, Patrick A. Ward, Donald L. Anton

Patent # 10,392,565 B2

Conversion of Biomass by Efficient Base-Catalyzed Decarboxyation Reaction

A novel biomass conversion method has been invented that has nearly 100% conversion at moderate temperature of 170-300°C. The methods can efficiently convert all components of a biomass feedstock to liquid hydrocarbons and carbon dioxide byproduct.

Patents

Gerald C. Blount, Maximillian B. Gorensek, Luther L. Hamm

AU Patent # 2014318458

Mass Transfer Apparatus and Method for Separation of Gases

A process and apparatus for separating components of a source gas is provided in which more soluble components of the source gas are dissolved in an aqueous solvent at high pressure.

Patents

George G. Wicks, Leung K. Heung,

Brazil Patent # 2254828 B1

Gas Storage Materials, Including Hydrogen Storage Materials *(validated in GB, Germany, France)*

This novelty method provides an improved solid-state storage of gases, in particular storage of hydrogen using metal hydrides such as alanates or borohydrides. A storage material allows release and optionally uptake of a gas, such as a hydride in the case of hydrogen storage materials

Aaron L. Washington II, Joseph A. Teprovich, Ragaiy Zidan

Patent # 10,418,539 B2

Enhanced Superconductivity of Fullerenes

This patent proposes a method for enhancing one or more characteristics of a superconductive fullerene with the goals of reaching 77 Kelvin and providing higher superconducting stability in the presence of magnetic fields. Proposed enhancements can include an increase in the critical transition temperature at a constant magnetic field, the existence of a superconducting hysteresis over a changing magnetic field, a decrease in the stabilizing magnetic field required for the onset of superconductivity, and/or an increase in the stability of superconductivity over a large magnetic field.

Patents

David A. Tamburello, Donald L. Anton, Bruce J. Hardy, Claudio Corgnale

Patent # 10,422,481 B2

Heating and cooling system for an on-board gas adsorbent storage vessel

Our patent describes a system that uses the AC system and radiator systems already on a car to provide temperature control (heating and cooling control) for a gas adsorbent storage system on a car. Gas adsorbent system could be hydrogen, natural gas, or any other gaseous fuel. This patent is a continuation of our previous patent in this area, which described a system that only used the AC system for temperature control.

Patents

Gerald C. Blount, Maximillian B. Gorensek

Patent # 10,415,469

Hybrid compressed air/water energy storage system and method

Elements of pumped storage hydroelectricity are combined with compressed air energy storage. Excess energy is stored by moving water to higher elevation by displacement with compressed air, and subsequently recovered from both the water (using a water-powered turbine) and the compressed air (using an expansion turbine). The invention offers a new way to store excess off-peak energy for use at peak demand times for integrating intermittent renewable sources into the grid.

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