Crosscutting Research, Rare Earth Elements, Gasification Systems, and Transformative Power Generation

POSTER PRESENTATIONS

	Topic	#	Organization	Project Title	Presenter
HIGH PERFORMANCE MATERIALS	Advanced Manufacturing	1	Southwest Research Institute (SwRI)	Digital Twin Model for Advanced Manufacture of a Rotating Detonation Engine Injector	Steve White
		2	United Technologies Research Center	Computation Tools for Additive Manufacture of Tailored Microstructure and Properties	Paul Attridge
		3	University of Pittsburgh	Integrated Computational Materials and Mechanical Modeling for Additive Manufacturing of Alloys with Graded Structure used in Fossil Fuel Power Plants	Wei Xiong
		4	Det Norske Veritas (DNV) GL USA, Inc.	ICME for Advanced Manufacturing of Ni Superalloy Heat Exchangers with High Temperature Creep + Oxidation Resistance for Supercritical CO2	Chris Taylor
		5	Oak Ridge National Laboratory (ORNL)	Components Fabricated by Additive Manufacturing	Sebastien N. Dryepondt
	Advanced Alloy Development	6	Oak Ridge National Laboratory (ORNL)	Probabilistic Life Assessment and Aged Materials Testing for Service Feedback of Gas Turbine Components	Sebastien N. Dryepondt
		7	Oak Ridge National Laboratory (ORNL)	Properties of Advanced Ni- based Alloys for AUSC Steam Turbines	Frank Chen
		8	Oak Ridge National Laboratory (ORNL)	Technical Qualification of New Materials for High Efficiency Coal-Fired Boilers and Other Advanced FE Concepts	B. A. Pint
		9	Oak Ridge National Laboratory (ORNL)	Advanced Alloy Design Concepts for High Temperature Fossil Energy Applications	Yukinori Yamamoto
		10	Pacific Northwest National Laboratory (PNNL)	Low Cost Fabrication of ODS Materials	Glenn Grant
		11	Pacific Northwest National Laboratory (PNNL)	Solid State Joining of Creep Enhanced Ferritic Steels	Glenn Grant
		12	Pacific Northwest National Laboratory (PNNL)	Integrated Process Improvement using Laser and Friction Stir Processing for Nickel Alloys used in Fossil Energy Power Plant Applications	Glenn Grant
		13	National Energy Technology Laboratory (NETL)	Phase Field Model Development for Plasticity/Creep	Youhai Wen
		14	National Energy Technology Laboratory (NETL)	Data Analytics for Designing Fe-9Cr Steels	Vyacheslav Romanov
		15	National Energy Technology Laboratory (NETL)	T91 Boiler Tube Oxide Spallation Experiments in High Pressure Steam	Gordon Holcomb
		16	National Energy Technology Laboratory (NETL)	High Entropy Alloy Development for Fossil Energy Applications	Michael Gao
		17	National Energy Technology Laboratory (NETL)	Development of Advanced High-Temperature Ni-Base Superalloys for Fossil Energy Applications	Paul Jablonski
		18	National Energy Technology Laboratory (NETL)	Manufacturing Compact Heat-Exchangers for Supercritical CO2 Power Cycles	David Alman
	Computational Materials	19	National Energy Technology Laboratory (NETL)	eXtremeMAT Overview	David Alman
		20	National Energy Technology Laboratory (NETL)	Data Computing for eXtremeMAT R&D - Improving data acquisition, transformation and analytics for advanced materials discovery	Kelly Rose
		21	Idaho National Laboratory (INL)	Physics Based Creep Simulation of Thick Section Welds in High Temperature & Pressure Applications	Tom Lillo
		22	Ames National Laboratory	Advanced Computational Approaches to Nickel-based Superalloys	Matt Kramer
		23	Arconic (Oak Ridge National Laboratory)	Multiscale Modelling of Microstructure Evolution during Rapid Solidification for Additive Manufacturing	Tyler Bochers
		24	Pratt & Whitney (Oak Ridge National Laboratory)	Predicting Limit Rub Response in Advanced Gas Turbine Engines	William J. Joost
		25	Siemens Energy Inc (Los Alamos National Laboratory)	High Performance Particle Based Modeling of Damage Nucleation from Forging Flaws in Fossil Power Generation Rotor Components	Kai Kadau
		26	Strategic Power systems, Inc (National Energy Technology Laboratory)	An Investigation of the Effect of Cyclic Operation on HRSG and Coal-fired Boiler Tubes - Failures Induced by High Thermal Stress and Component Fatigue	Salvatore A. DellaVilla Jr
		27	Strategic Power Systems, Inc (Oak Ridge National Laboratory)	Utilizing High Peformance Computational Analysis to Characterize the Operating Envelop of Various NGCC Operating Technologies -- HPC4Materials	Salvatore A. DellaVilla Jr
		28	United Technologies Research Center (LLNL)	Understanding Complex, Coupled Mechanisms of Oxidation and Hot Corrosion Degradation with Computational Models	Kenneth Smith
		29	Vacuum Process Engineering (Sandia National Laboratory)	Compact Diffusion Bonded Heat Exchanger Fatigue Life Simulations	Blake Lance
		30	VAST Power Systems, Inc.	Ultra-Clean Transient Turbine Combustor	David L. Hagen

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SENSORS & CONTROLS	Controls	31	Reaction Engineering International	Development of Miniaturized High-Temperature Multi-Process Monitoring System	Hong-Shig Shim
		32	Reaction Engineering International	Combustion Performance and Emissions Optimization Through Integration of a Miniaturized High-Temperature Multi Process Monitoring System	Kevin Davis
		33	Ames National Laboratory	Advanced Tools for Cyber-Physical Systems and Digital Twins	Mark Bryden
		34	Electric Power Research Institute, Inc	Integrated Boiler Management through Advanced Condition Monitoring and Component Assessment	Susan Maley
		35	National Energy Technology Laboratory (NETL)	Application of advanced data analytic tools for the existing power plant fleet	Larry Shadle
	Sensors	36	Luna Innovations	Extreme Temperature Distributed Sensing for Modular Energy Systems	John Ohanion
		37	Intelligent Fiber Optic Systems Corporation	Embedded Multiplexed Fiber-Optic Sensing for Turbine Control and PHM	William Price
		38	SRS Holdings, LLC	Wireless Embedded Multi Functional Sensor System for In-Situ Health Monitoring of Refractory Liners in Fossil Energy Systems	Rajalekshmi Pillai
		39	University of Maine System	High Temperature Integrated Gas and Temperature Wireless Microwave Acoustic Sensor System for Fossil Energy Applications	Mauricio Pereira da Cunha and Armando Ayes
		40	National Energy Technology Laboratory (NETL)	Atomic level modeling of high temperature sensing materials	Yuhua Duan
		41	National Energy Technology Laboratory (NETL)	Development of a LIBS System for Subterranean Water Chemistry	Dustin McIntyre
	Robotics-based Inspection	42	Colorado School of Mines	AI Enabled Robots for Automated Nondestructive Evaluation and Repair of Power Plant Boilers	Hao Zhang
		43	Florida International University	Development of a Pipe Crawler Inspection Tool for Fossil Energy Power Plants	Daniel Martinez
		44	University of Missouri	A Robotics-Enabled Eddy Current testing System for Autonomous Inspection of Heat Exchanger Tubes	Jian Lin
		45	New Mexico State University	A Lizard-Inspired Tube Inspector (LTI) Robot	Felice Mora
		46	University of Texas at El Paso	Autonomous Aerial Power plant Inspection in GPS Denied Environments	Rizia Mousumi
	Cybersecurity	47	GRID7, LLC	E-Blockchain: A Scalable Platform for Secure Energy Transactions and Control	David Cohen
		48	Electric Power Research Institute, Inc	Cyber Security Risk Reduction Framework for Generation I&C Technology	Jeremy Lawrence
		49	General Electric Company	Physical Domain Approaches to Reduce Cybersecurity Risks Assocated with Control Systems	Daniel Holzhauer
		50	Siemens Corporation	Cyber Secure Sensor Network for Fossil Fuel Power Generation Assets Monitoring	Benjamin Justus
		51	Southern Company Services Inc	Operational Technology Behavioral Analytics	Patrick Cossley and Stephen Reaves
		52	Sonalysts, Inc.	Metaphortress: A Situational Awareness Platform	Tim Oullette and Bill Russ
		53	Physical Optics Corporation	Data Ingestion, Analysis, and Situational Awareness Tool	Olga Kuklina
		54	Ridgetop Group, Inc.	Automated Situational Awareness Technologies for Robust and Resilient Fossil Energy Power Via Multivariate	Ferenc Szidarovszky
WATER TECHNOLOGIES	Condensers	55	Advanced Cooling Technologies, Inc.	A Novel Steam Condenser with Loop Thermosyphons and Film-Forming Agents for Improved Heat Transfer Efficiency and Durability	Richard Bonner
		56	Massachusetts Institute of Technology	Capillary-Driven Condensation for Heat Transfer Enhancement in Steam Power Plants	Yajing Zhao
		57	Nelumbo Inc.	Enhancing Steam-Side Heat Transfer via Microdroplet Ejection using Inorganic Coatings	Nick Montes
	Wastewater	58	Carnegie Mellon University (CMU)	Trace Element Sampling and Partitioning Modeling to Estimate Wastewater Compsition and Treatment Efficacy of Coal Generators	Jiachen Liu
		59	Lehigh University	Coal-Fired Power Plant Configuration and Operation Impact on Plant Effluent Contaminant and Conditions	Deliya Kim
		60	Gas Technology Institute (GTI)	Co-Generation Wastewater Treatment at Coal-Fired Energy Plants	Scott Trybula
		61	Electric Power Research Institute	Demonstrations of Holistic, Lower Cost/Energy Effluent Water Management Approaches for Coal-Fired Energy	Trent Rogers
		62	Es Engineering Services, LLC	Flue-Gas Desulfurization Effluent Management Using an Innovative Low-Energy Biosorption Treatment System to Remove Key Contaminants	Jinjian Wu
	Systems Analysis	63	National Energy Technology Laboratory (NETL)	Promod Analysis of Plant Water Management	Erik Shuster
		64	Carnegie Mellon University (CMU)	Analysis of Advanced Cooling Systems for Fossil Power Plants	Haibo Zhai

	Topic	#	Organization	Project Title	Presenter
COAL - CARBON RELATED	Rare Earth Elements	65	Anactisis, Inc.	Coal Ash Beneficiation Through Critical Material Extraction and Recovery	Clinton Noack
		66	Wyonics, LLC	Ionic Liquids as Advanced Solvents for the Extraction of Rare Earth Elements from Coal Products	Kristin Di Bona, Gabriela Gurau, Robin Rogers
		67	Skyhaven Systems, LLC	Rare Earth Extraction from Coal Fly Ash	Karen Jayne
	Coal Beneficiation	68	Carbon Fuels L.L.C.	Novel Charfuel® Coal Refining Process 18 TPD Pilot Plant Project for Co-Producing an Upgraded Coal Product, and Commercially Valuable Co-Products	Lee Meyer
		69	Mineral Separation Technologies Inc.	Improving DXRT Efficiency for Coal Beneficiation with Advanced Air Jets	Charles Roos
		70	Minus 100, LLC	U.S. Coal to Conductive Inks	James Hnat
		71	Touchstone Research Laboratory Ltd.	Silicon Carbide (SIC) Foam for Molten Salt Containment in CSP-GEN3 Systems	Dwayne Morgan
		72	Physical Sciences, Inc.	Efficient process for the production of high conductivity, carbon-rich materials from coal	Dorin Preda
		73	Semplastics EHC, LLS	Coal-Core Composites for Low Cost, Lightweight, Fire-Resistant Panels and Roofing Materials	William Easter
	CCS and Power Systems	74	Pennsylvania State University	University Coalition for Fossil Energy Research	Joel Morrison
GASIFICATION	Gasification	75	National Energy Technology Laboratory (NETL)	NETL Oxygen Carriers for Coal Conversion	Jonathan W. Lekse
		76	National Energy Technology Laboratory (NETL)	Non-Traditional Thermal Reactor Development for Gasification	Justin Weber
		77	National Energy Technology Laboratory (NETL)	Material Development for Advanced Manufacturing of Gasification Systems	James Bennett
		78	National Energy Technology Laboratory (NETL)	Slag Management of Carbon Feedstock Used in Gasification	James Bennett

NETL Technology Demo Presentations

TECHNOLOGY	PRESENTER
Multiphase Flow Science – MFiX Multiphase Flow CFD Software Suite	Mehrdad Shahnam and Jeff Dietiker
Institute for the Design of Advanced Energy Systems (IDEAS) Unit Model Library and Process Flowsheeting	Miguel Zamarripa
Virtual Data Computing & Curation Platform for FE R&D - NETL's Energy Data eXchange (EDX)	Kelly Rose