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HBCUs Research Conference Agenda and Abstracts

Proceedings of a conference held at and sponsored by
Ohio Aerospace Institute
Cleveland, Ohio
April 8–9, 1998

National Aeronautics and
Space Administration

Lewis Research Center

April 1998

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LeRC HBCUs CONFERENCE
HBCUs RESEARCH CONFERENCE
APRIL 8-9, 1998

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National Aeronautics and
Space Administration
Lewis Research Center
Cleveland, OH 44135-3191



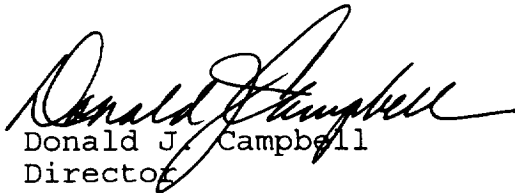
Reply to Attn of:

NASA Lewis Research Center's commitment to excellence continues to grow in terms of investment and support for Historically Black Colleges and Universities (HBCUs). Over the last 5 years, Lewis' total research and development grant awards to 19 HBCUs exceeded its performance goal by a substantial margin.

Lewis' HBCUs Research Program is designed to utilize the ability of HBCUs to conduct fundamental science and develop physical infrastructure related to NASA's disciplines. To reach our goals, we must build partnerships with other Government agencies, industry, and academia. Our research partnerships with the Nation's HBCUs are an integral part of our strategy.

The HBCUs Research Conference is a critical element in ensuring the success of Lewis' research programs. In addition, it provides a forum for showcasing the research capabilities of the participating HBCUs.

It is with great pleasure that I welcome the participants and congratulate everyone associated with the Fifth NASA HBCUs Research Conference.


Donald J. Campbell
Director

National Aeronautics and
Space Administration
Lewis Research Center
Cleveland, OH 44135-3191



Reply to Attn of:

This Research Conference is the fifth one at which researchers and students from Historically Black Colleges and Universities (HBCUs) present progress reports on Lewis-sponsored research. Lewis management and researchers are proud of the results obtained to date and encouraged by the competence and contributions of the Principal Investigators (PIs) and student researchers.

I welcome all presenters and congratulate you for the comprehensive quality of topics covered by your research programs. Also, I congratulate and thank the Lewis Technical Monitors for their excellent support. The phrase "Lewis means teamwork" is directly applicable to the partnerships between Lewis and HBCUs.

A handwritten signature in black ink that reads "Julian M. Earls".

Julian M. Earls
Deputy Director for Operations

FIFTH HBCUs RESEARCH CONFERENCE

April 8-9, 1998

AGENDA

Presiding: Dr. Sunil Dutta
SDB Program Manager

Wednesday, April 8, 1998

8:00 - 8:30 a.m.	Registration
8:30 - 9:00 a.m.	Introduction and Welcome
	Dr. Julian M. Earls Deputy Director for Operations NASA Lewis Research Center
	Dr. Michael J. Salkind President Ohio Aerospace Institute
9:00 - 10:00 a.m.	Oral Presentations Three (3) Concurrent/Parallel Sessions
10:00 - 10:30 a.m.	Break
10:30 - 12:00 Noon	Oral Presentations
12:00 - 1:00 p.m.	Lunch (On Your Own)
1:00 - 3:00 p.m.	Oral Presentations
3:00 - 3:30 p.m.	Break
3:30 - 5:00 p.m.	Oral Presentations

Thursday, April 9, 1998

8:00 - 8:30	Introduction and Welcome
	Dr. Julian M. Earls Deputy Director for Operations NASA Lewis Research Center
	Dr. Michael J. Salkind President Ohio Aerospace Institute
	Mr. Donald J. Campbell Director NASA Lewis Research Center

Mr. Richard S. Christiansen
Acting Associate Administrator for Aeronautics and Space
Transportation Technology
NASA Headquarters

8:30 - 12:00 Noon	NASA Headquarters Small Disadvantaged Business Forum (Continuation of HBCUs Research Conference)
12:00 - 1:00 p.m	Lunch (On Your Own)
1:00 - 3:00 p.m	Poster Sessions
3:00 - 4:00 p.m.	Individual Principal Investigator/Technical Monitor Meeting
4:00 - 5:00 p.m	Remove Posters

**HBCU Research Conference
List of Poster Papers
April 8-9, 1998**

P1	Alabama A&M University	"Optical Sensors Based on Single Arm Thin Film Waveguide Interferometer"
P2	Clark Atlanta University	"Turbulent Premixed Methane-Air Combustion: Emissions, Characteristics and Modeling"
P3	Clark Atlanta University	"X-ray Diffraction Studies of the Structure and Thermochemistry of Alkaline-Earth Oxide-Coated thermionic Cathodes"
P4	Clark Atlanta University	"Growth and Characterization of III-V Semiconductors for Device Applications"
P5	Clark Atlanta University	"Fatigue Testing of Unidirectional T650-35/AMB 21 Laminates"
P6	Clark Atlanta University	"The Construction of Finite Difference Schemes Having Special"
P7	Clark Atlanta University	"Influence of Material Distribution on Impact Resistance of Hybrid Composites"
P8	Fisk University	"Nanocrystals Formed by Laser Ablation and Ion Beams and Their Application to Photovoltaic Devices"
P9	Florida A&M University	"PLD Growth of Boron Nitride Thin Films for Alphasoltaic Device Applications"
P10	Grambling State University	"Polymerizable Monomer Reactants—Modified Polyimides"
P11	Hampton University	"Parallelization of Rocket Engine System Software (PRESS)"
P12	Hampton University	"An Analytical Description of Phase Mask Defects as Verified by Grating-Fiber Image Reproduction"
P13	Hampton University	"Preliminary Fringe-Counting Verification Wavelength Standard"
P14	Hampton University	"UV Induced Densification and Ablation During the Formation of Bragg Gratings in SiO ₂ Preforms, Optical Fibers, and Gradient Index Lenses"
P15	Hampton University	"Theoretical Formulations Towards the Solution of Radiation Loss Problems in Optical Waveguide Couplers with Selectable Power Splitting Ratios"
P16	Howard University	"Design and Implementation of An Intelligent Fuzzy Logic-Based Controller for Position/Speed Control and Tracking of Permanent Magnet Motor Drives"
P17	Howard University	"Design of a Microcontroller for PM DC Motor Drives"
P18	Howard University	"Laser Optogalvanic Spectroscopy of Argon and Neon for Normal and Microgravity Combustion"
P19	Howard University	"Analysis of Thermal State-of-Charge in Solar Heat Receivers"

P20	Howard University	"Aerospace Power System Automation - Using Everett Method"
P21	Howard University	"Artificial Neural Network, Fuzzy Logic and Expert Systems Approaches to Hybrid Electric Vehicle Control System"
P22	Jackson State University	"Expert System Architecture for Rocket Engine Numerical Simulators: A Vision"
P23	NC A&T State University	"Aerothermo-Structural Analysis of Low Cost Composite Nozzle/ Inlet Components"
P24	NC A&T State University	"Numerical Simulations of Wing-Body Junction Flows"
P25	NC A&T State University	"Mechanical Behavior and Analytical Modeling of Melt-Infiltrated SiC/SiC Woven Composite"
P26	NC A&T State University	"Coupled Brillouin and Shape Memory Alloy Systems for Active Vibration Control"
P27	Savannah State University	"Photovoltaic-Diesel Hybrid Supervisory Control and Data Acquisition System Design"
P28	Savannah State University	"Supervisory Control and Data Acquisition Experimental Plan Using Photovoltaic-Diesel Hybrid Systems"
P29	Savannah State University	"Narrow Angle Diversity Study Using ACTS Ka-band Signal with Two USAT Ground Stations"
P30	Washington State University	"Integration of Microstructure in a Thermomechanical Processing Model"
P31	Southern University	"Knowledge Preservation and Web-tools"
P32	Spelman College	"Development of Synchronously Scanned OPO CARS as a New Probe for Hostile Environments"
P33	Tennessee State University	"Tennessee State University Research Project for Increasing The Pool of Minority Engineers"
P34	Tennessee State University	"Experimental Characterization of Two-Dimensional Convective Melting of Packed Ice Bed"
P35	Tennessee State University	"Non-Destructive Determination of Time-Dependent Thermal Conductivity of Melting Two-Phase Medium"
P36	Tennessee State University	"Numerical Modeling of Two-Dimensional Convective Melting of Granular Packed Beds"
P37	Tuskegee University	"Isotopic Enrichment of Boron in the Sputtering of Boron Nitride with Xenon Ions"
P38	Tuskegee University	"Characterization of Flow Behind The Fan of a Turbofan Engine"
P39	Wilberforce University	"Electrodeposited CuInSe ₂ Thin Film Junctions"
P40	Winston-Salem State University	"Parallel Object-Oriented Programming in Network Environment"