



Mechanical Engineering
Academy of Distinguished Alumni

Marcus D. Ashford, Ph.D.

Outstanding Young Mechanical Engineer, 2011

BSME, Louisiana State University, 1994

MSME, The University of Texas at Austin, 2002

Ph.D., ME, The University of Texas at Austin, 2004

Associate Professor, Mechanical Engineering
The University of Alabama

Associate Professor Marcus Ashford joined the University of Alabama Mechanical Engineering faculty in fall 2004 after earning his Ph.D. and completing a postdoctoral appointment at The University of Texas at Austin. Marcus has worked at Ford Motor Company as a powertrain development engineer, and at Exxon Chemical as a Mechanical Contact Engineer.

He has extensive experience in engine and vehicle dynamometer testing, with both PFI and direct-injection engines. Working under Dr. Ron Matthews for his dissertation research, he developed the On-Board Distillation System (OBOS), which reduced hydrocarbon emissions by 80% in a full-size SUV. This research led to him being named the 2004 Graduate Student of the Year by the National Society of Black Engineers.

Marcus specializes in combustion and computer control of engines, particularly in the reduction of emissions during cold-starts. Specific research

projects include the development of high-speed exhaust hydrocarbon sensors and fuel volatility sensors to be used as engine computer inputs. Also under development are fuel preprocessors that help reduce hydrocarbon emissions from cold starts and fugitive releases. Marcus has an extensive program to develop optimal strategies to use hydrogen as an internal combustion engine fuel.

Marcus's teaching experience includes advanced thermodynamics and internal combustion engine fundamentals and controls. Active in mentoring and community outreach programs, Marcus is currently developing Rockets and Racecars, a program to generate enthusiasm about science and technology majors in middle and high school students. More than half of the students under Marcus' supervision have been from traditionally underrepresented populations (in engineering), and he is very involved in consulting students in design projects for both class and intercollegiate competition.