Emissions, Environment and Sustainability

The focus of this activity is to create sessions on the most create areas of vehicle emission, environmental impacts and sustainability including thermal management, exhaust emissions, particulates, modeling as well as end-of-life, alternate energy and electrification strategies.

SDP101 Auto Industry Corporate Sustainability Programs
This session will highlight corporate sustainability programs and how they are encouraged and evaluated by NGOs and governmental agencies. Improvements in corporate programs have been coordinated and guided by interested parties and tested by their rating systems. Case studies of joint efforts will be reported by authors from inside and outside the industry. Sharing the findings will help sustain the focus on corporate sustainability programs and generate additional avenues for real improvement

SDP102 L CA and Automotive Sustainability: Materials Production; Manufacturing; Use; End-of-Life
This session reviews topics on life cycle assessment and automotive sustainability with respect to materials, tools/technologies, and/or processes, in any phase of the automotive life cycle, Materials Production; Manufacturing; Use and/or End-of-Life. Example topics included in this session can range from updates on the development of life cycle analysis databases for use by the national and international community, to energy efficient manufacturing, or parts reuse and remanufacturing, to mention a few.

SDP103 Advances in Alternative Energy Sources for Sustainable Development in the Transportation Sector
This session explores advances in the creation of sustainable energy sources and their usage in the transportation sector. Topics can include research and in-production technology used to produce renewable energy sources and materials. A discussion on lifecycle analysis of the energy sources is also highly recommended. The SDPC encourages usage of papers, presentations, and panels in this session to display leading edge technologies and practical tools for engineers.

SDP104 Vehicle Electrification Strategies for Sustainability
In this session speakers will explore the issues and design strategies of bringing sustainable EV, PHEV and vehicle electrification technologies to market. The session will also explore new technological advances for battery charging, infrastructure improvements, and repurposing/recycling of battery chemistries. Identifying the customer value of these sustainable technologies is key to their success and growth. The design models and systems presented in this session highlight ways to optimize customer value to make these technologies successful. Elements within the EVSE value chain governed by

participants such as EVSE manufacturer, utility provider, network operators, individual site owners, and finally the EV owner and consumer for enhancement to sustainability initiatives will also be explored.

HX101 Thermal System Components
Thermal Management represents one of the key aspects of the vehicle development. It ensures that the temperatures in the underhood and underbody areas are in desired ranges, that thermal systems operate as designed, and that no component operation is at risk due to excessive temperatures. This session covers the design of thermal components and systems and their vehicle integration.

HX102 Thermal Systems Modeling and Simulation
The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

HX103 Energy Efficiency of Thermal Systems
Proper thermal management can significantly contribute to overall system energy efficiency. This session highlights the latest developments in thermal management energy efficiency.

HX104 Climate Control
Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Localized Comfort, Secondary Fluids, Air Quality, Controls, System Sizing and HVAC consumer interface are just a few of the recent advances.

HX105 Thermal Systems for Hybrid and Electric Vehicles
The purpose of this session is to share experiences and lessons learned to advance the technology in the field of thermal management of electric and hybrid vehicle systems. This session presents topics covering both testing and simulation of hybrid and electric vehicle thermal systems.

PFL410 Exhaust Emissions Control - New Developments
Papers will address novel technology concepts and the integration of these concepts and/or existing technologies into new emission control systems or new strategies for cleaning engine exhaust. Example topics include new types of catalysts, absorbers or filters, and innovative integration of various catalytic, adsorbing or filtering components to improve exhaust emissions. Related developments in sensors, control systems, thermal management or waste heat recovery will also be considered.

PFL421 System Integration And Durability
Papers on the following exhaust emissions control topics will be addressed: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

PFL422 Advanced Catalysts and Substrates

Presentations in this session cover the systems engineering experiences required to achieve ultra-low emission levels on gasoline light-duty vehicles. Emission system component topics for this session include the development of advanced three-way catalysts, the development of NOx control strategies for gasoline lean burn engines, the application of high cell density substrates to advanced emission systems and the integration of these components into full vehicle emission systems.

PFL423 Advances in Particulate Filter Substrates
Papers on the following exhaust emissions control topics will be considered: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

PFL424 Advances in Nox Reduction Technology
Papers on the following exhaust emissions control topics will be considered: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

PFL425 On-board Measurement and Control
This session will focus on internal combustion engine emissions measurement and control. Papers and presentations will cover topics that discuss varying methods of emissions control and data acquisition during operation of vehicles and engines. Topics will also include various advanced analysis techniques to determine emissions levels and reduce emissions.

PFL426 Meeting the ARB Low Emission Standard
Papers on the following exhaust emissions control topics will be considered: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

PFL430 Emission Control Modeling
Papers cover exhaust aftertreatment system models, as well as their validation and application. Technologies encompassed include DOC, HC Trap, DPF, GPF, LNT, TWC, SCR, SCRF, ammonia oxidation catalysts, hybrid or combined catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3D models of individual components to system level simulation, optimization, variation, degradation, and control.

PFL440 Emissions Measurement and Testing
Sub-sessions cover emissions measuring techniques and testing regimes. This includes new analysis techniques and the novel application of existing techniques, the comparison of existing and proposed testing regimes with real world experience, including modeling.

PFL450 Particle Emissions from Combustion Sources
Papers for this session include: particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid

cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

PFL460 Gaseous Engine Emissions

Papers for this session include: discussing well-to-wheels CO2 production for alternative technologies, fuel economy and all greenhouse gas emission research with their primary focus on engine, emissions, fuels, control or related components or sub-components within. It also includes hydrocarbon species and specific NOx species production over aftertreatment devices as a result of changes in fuel specification and the inclusion of bio-derived components and consideration of secondary emissions production (slip) as a result of aftertreatment.