

**40th AIAA Fluid Dynamics Conference and Exhibit  
10th AIAA/ASME Joint Thermophysics  
and Heat Transfer Conference  
27th AIAA Aerodynamic Measurement Technology  
and Ground Testing Conference  
28th AIAA Applied Aerodynamics Conference  
41st AIAA Plasmadynamics and Lasers Conference  
5th AIAA Flow Control Conference**

28 June–1 July 2010  
Hyatt Regency McCormick Place  
Chicago, IL

### Synopses

#### ***40th Fluid Dynamics Conference and Exhibit***

The 40th AIAA Fluid Dynamics Conference will include papers covering all aspects of fluid dynamics, particularly those relevant to aerospace applications. Topics range from basic research and development to applied and advanced technology, including novel experimental and computational observations, interdisciplinary papers that bridge theoretical, experimental, and numerical approaches, and papers that provide innovative concepts and analyses, or especially new insight into flow physics. Sessions will include papers related to low and high speed flows, instability, transition, turbulence, vortex dynamics, multi-phase and/or reacting flows, unsteady fluid dynamics, numerical and experimental methods, multidisciplinary applications, and various aspects of flow control. The conference is collocated with several other conferences to enable close synergism and interaction among a broad range of research disciplines in fluid dynamics, and several joint and invited sessions on topics of broad interest will be arranged.

#### ***10th AIAA/ASME Joint Thermophysics and Heat Transfer Conference***

The AIAA/ASME Joint Thermophysics and Heat Transfer Conference will feature papers on topics in heat transfer and thermophysics. Conference sessions will focus on technical topic areas related to all aspects of thermal energy transfer in aerospace and mechanical engineering applications. Additionally, each year, the AIAA Thermophysics Technical Committee offers a Best Paper Award in both the Professional and Student Categories (with the student receiving a monetary award).

#### ***27th AIAA Aerodynamic Measurement and Ground Testing Conference***

The 27th AIAA Aerodynamics Measurement and Ground Testing Conference is a partnership of the Advanced Measurement Technology Technical Committee (AMTTC) and the Ground Testing Technical Committee (GTTC). The conference will feature abstracts of proposed papers on the science, technology, and application of ground testing and aerodynamic measurements, from basic research, to measurements for understanding complex flows, to facility development, to system test, and from research laboratories to test facilities and the lessons learned. This year's conference will feature sessions built from four main areas of interest: measurement and testing technology research and development; advances in ground test capability; operations and policy; and ground test facilities infrastructure sustainment.

#### ***28th AIAA Applied Aerodynamics Conference***

The 28th Applied Aerodynamics Conference provides a forum for the presentation and discussion of technical material in diverse areas of theoretical, computational, and experimental applied aerodynamics. Conference sessions will focus on technical topics in the areas of wind-tunnel and flight-testing aerodynamics, unsteady aerodynamics, subsonic, transonic, supersonic, hypersonic aerodynamics, vortical/vortex flow applications, high angle of attack and high lift aerodynamics, boundary layer transition and drag prediction, low Reynolds number aerodynamics, airfoil/wing/configuration aerodynamics, propeller/rotorcraft aerodynamics, weapon carriage and store separation aerodynamics, innovative aerodynamic concepts/designs, aerodynamic design methodologies, active flow control applications, unmanned aerial vehicle designs/testing, missile/projectile/guided-munitions aerodynamics, aerodynamic-structural dynamics interaction, icing effects on vehicle aerodynamics, application of artificial intelligence techniques to aero problems, and application of CFD methods to aerodynamic configurations validated against experimental data. The conference is collocated with several other conferences to enable close synergism and interaction among a broad range of research disciplines in applied aerodynamics.

#### ***41st AIAA Plasmadynamics and Lasers Conference***

The 41st AIAA Plasmadynamics and Lasers Conference will address current basic and/or applied research in the areas of plasmadynamics, lasers, electromagnetics, diagnostics, and related topics in nonequilibrium reacting flows. Contributed papers will describe contemporary experimental, analytical, and computational efforts. The program will include many interdisciplinary papers and contributions describing state-of-the-art developments in the areas of plasmadynamics and lasers. Conference sessions will focus on the techni-

cal areas of plasma and laser physics, properties, chemistry and kinetics; space plasma physics and applications, plasma interactions, space laser applications, tethers, and space experiments; plasma materials processing and environmental applications, hazardous material disposal; laser devices and advanced diagnostics; laser optics and fluid-optics interactions; magnetohydrodynamic power, flow control, and modeling; weakly-ionized gas issues; and space plasma propulsion.

## 5th Flow Control Conference

The 5th AIAA Flow Control Conference is a biennial event held in conjunction with the Fluid Dynamics summer meeting. It is a forum for all aspects of flow control technology, emphasizing the multidisciplinary interaction among a diverse range of research disciplines with a common basis in fluid dynamics. Technical sessions range from actuation technology to applications of flow control across a wide spectrum of flow regimes. Flow Control applications range from fundamental studies through closed-loop control investigations. Special sessions include a Testing Capabilities for Flow Control panel discussion and a Progress in Flow Control poster session.

## 1st AIAA CFD High-Lift Prediction Workshop (HiLiftPW-1)

The 1st AIAA CFD High-Lift Prediction Workshop, held in conjunction with the 28th Applied Aerodynamics Conference, will occur on 26–27 June, the weekend prior to the conference. The objectives of the High-Lift Prediction Workshop are to:

- Assess the numerical prediction capability (mesh, numerics, turbulence modeling, high-performance computing requirements, etc.) of current-generation CFD technology/codes for swept, medium-to-high-aspect ratio wings for landing/take-off (high-lift) configurations.
- Develop practical modeling guidelines for CFD prediction of high-lift flowfields.
- Advance the understanding of high-lift flow physics to enable development of more accurate prediction methods and tools.
- Enhance CFD prediction capability for practical high-lift aerodynamic design and optimization.

A likely outcome of the initial workshop will be to identify areas that could benefit from additional research and development. The workshop is open to participants worldwide and is sponsored by the AIAA Applied Aerodynamics Technical Committee. Participation in the high-lift prediction studies is not required to attend the workshop; everyone is welcome. Open, unbiased forums are included in the workshop to discuss the results and promote cross-pollination of best practices. The HiLiftPW-1 test cases are based on the Trapezoidal (Trap) Wing configuration, which was used in a series of NASA Langley 14 x 22 Foot Subsonic Wind Tunnel tests in 1998 and 2002. A significant amount of high-quality data is available readily. Please join us and attend the initial workshop to help kick off the High-Lift Prediction series of computational studies. For more information, visit the HiLiftPW Web site: <http://hiliftpw.larc.nasa.gov>.

## Special Events

### Monday, 28 June

#### 0800–0900 hrs

*Plenary Session: “Key Air Force Research Priorities: Science and Technology at the Leading Edge”*

Speaker: Dr. Werner Dahm, USAF Chief Scientist

#### 0900–1000 hrs

##### *Accompanying Persons Breakfast*

Accompanying persons are invited to meet at 0900 hrs on Monday, 22 June, for coffee and tea, where information about local attractions, activities, and tours will be available.

#### 1700–1800 hrs

##### *Plasmadynamics and Lasers Award Lecture*

Speaker: S.T. Demetriades, Plasmadynamics and Lasers Award Winner

#### 1800–1930 hrs

##### *Welcome Reception with the Exhibitors*

Admission is included in the registration fee where indicated. Additional tickets may be purchased for \$60 via the registration form or at the AIAA on-site registration desk.

### Tuesday, 29 June

#### 0800–0900 hrs

##### *Thermophysics Awards Lecture*

#### 1200–1400 hrs

##### *Awards Luncheon*

Admission is included in the registration fee where indicated. Additional tickets may be purchased for \$50 via the registration form or at the AIAA on-site registration desk. The Aerodynamic Measurement Technology Award, Ground Testing Award, Fluid Dynamics Award, Thermophysics Award, Plasmadynamics and Lasers Award, and Aerodynamics Award will be presented at the luncheon.

Speaker: Tom Ramsay, Senior Engineer, Honda R&D Americas Inc.

##### *“Race Car Aerodynamics”*

In the past 30 years, car racing has seen an explosion in technology and a subsequent dramatic increase in top speeds. Along with the advances in engine, suspension, and safety technologies, the impact of aerodynamics on performance has been especially important as top speeds have increased. Due to the engine and chassis rules imposed by various sanctioning bodies, aerodynamics has increasingly been seen as an area to understand and exploit, and giving the teams a competitive advantage. The talk will outline three aspects of racing: the car, the track, and the race, focusing on open wheel race cars, where wing aerodynamics plays a dominant role in reducing lap times.

#### 1700–1800 hrs

##### *Fluid Dynamics Awards Lecture*

### Wednesday, 30 June

#### 0800–0900 hrs

##### *Applied Aerodynamics Awards Lecture*

#### 1200–1300 hrs

##### *Exhibitor Buffet Luncheon*

Admission is included in the registration fee where indicated. Additional tickets may be purchased for \$60 via the registration form or at the AIAA on-site registration desk.

## Exhibits

Don't miss this exciting exhibition featuring displays on internal and external aerodynamics, airfoil and vehicle design, hypersonics, instrumentation, and other industry-related fields. AIAA is sponsoring this collocated conference and exhibition with six technical disciplines. Companies from all over the world will have products available for hands-on demonstrations. Visit the Exhibit Hall, located in the Regency Ballroom Foyer, during the following hours:

Monday, 28 June	1730–1900 hrs (Reception)
Tuesday, 29 June	1000–1700 hrs
Wednesday, 30 June	1000–1800 hrs
Lunch Reception	1200–1300 hrs

# AIAA Programs

**General Chair**

Nicholas J. Georgiadis  
NASA Glenn Research Center

**TECHNICAL PROGRAM CHAIRS**

**27th AIAA Aerodynamic Measurement Technology and Ground Testing Conference**

*Aerodynamic Measurement Technology  
Technical Program Chair*  
James R. Gord  
Air Force Research Laboratory

*Ground Testing Technical Program Chair*  
Steven Dunn  
Jacobs Technology Inc., ROME Group

**28th AIAA Applied Aerodynamics Conference  
1st AIAA CFD High-Lift Prediction Workshop (HiLiftPW-1)**

Jim Guglielmo  
The Boeing Company

Holger Babinsky  
University of Cambridge

Robert W. Tramel  
Kord Technologies, Inc.

**5th AIAA Flow Control Conference**

Dennis E. Culley  
NASA Glenn Research Center

**40th AIAA Fluid Dynamics Conference**

Won-Wook Kim  
Pratt & Whitney

**41st AIAA Plasmadynamics and Lasers Conference**

Trevor Moeller  
University of Tennessee Space Institute

**10th AIAA/ASME Joint Thermophysics and Heat Transfer Conference**

Jay Ochterbeck  
Clemson University

Patrick Yee

The Aerospace Corporation

Timothy S. Fisher  
Purdue University

**Cyber Café (Internet Access)**

There will be computers with complimentary Internet access in the Exhibit Hall for conference attendees during the following hours:

Monday, 28 June	0700–2200 hrs
Tuesday, 29 June	0700–2200 hrs
Wednesday, 30 June	0700–2200 hrs
Thursday, 1 July	0700–1200 hrs

**Pre-Conference Book Sale—15% Off for Conference Attendees**

Conference attendees save 15% off the price of any books when placing their *tax-free* orders prior to the conference. Plus, they'll receive *free shipping* to the conference. We will ship the books to the conference and they will be ready for the attendee to pick up at the AIAA preregistration desk during posted registration hours. Orders must be placed no later than **14 June 2010**

to take advantage of this special offer. (Please note that book orders not picked up during the conference will be shipped to the attendee via FedEx/UPS/DHL at the attendee's expense.)

**Registration**

AIAA is committed to sponsoring world-class conferences on current technical issues of the day in a safe and secure environment. As such, all delegates will be required to provide proper identification prior to receiving a conference badge and associated materials. All delegates must provide a valid photo ID (driver's license or passport) when they check in. For student registrations, a valid student ID is also required. We thank you for your cooperation.

All participants are urged to register on the AIAA Web site at [www.aiaa.org/events/chicago2010](http://www.aiaa.org/events/chicago2010). Registering in advance saves conference attendees time and up to \$200. A check made payable to AIAA or credit card information must be included with your registration form. A PDF registration form is available on the AIAA Web site. Print, complete, and mail or fax with payment to AIAA. Address information is provided.

Early-bird registration forms must be received by **1 June 2010**. Preregistrants may pick up their materials at the advance registration desk. All those not registered by **21 June 2010** may do so at the on-site registration desk. All nonmember registration prices include a one-year AIAA membership. If you require more information, please call 703.264.7500 or e-mail [rachela@aiaa.org](mailto:rachela@aiaa.org).

Registration fees are as follows:

	<b>Early</b> By 1 June	<b>Standard</b> 2–21 June	<b>On-Site</b> 27 June
<i>Option 1: Full Conference with Online Proceedings</i>			
Member	\$640	\$740	\$840
Nonmember	\$775	\$875	\$975

Includes Monday reception, Tuesday awards luncheon, Wednesday lunch reception, and single-user access to online proceedings (all conferences).

*Option 2: Full Conference with Combined Package of Online Proceedings and After-Meeting DVD*

Member	\$690	\$790	\$890
Nonmember	\$825	\$925	\$1025

Includes Monday reception, Tuesday awards luncheon, Wednesday lunch reception, single-user access to online proceedings (all conferences), and after-meeting DVD.

*Option 3: Full-Time Undergraduate Student*

Member	\$0	\$15	\$30
Nonmember	\$30	\$40	\$50

Includes conference and exhibits participation only (no food functions included).

*Option 4: Full-Time Graduate or Ph.D. Student*

Member	\$40	\$50	\$60
Nonmember	\$70	\$80	\$90

Includes conference and exhibits participation only (no food functions included).

*Option 5: Full-Time Retired*

AIAA Member	\$40	\$50	\$60
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Includes sessions and exhibits, plus Monday reception, Tuesday awards luncheon, and Wednesday lunch reception.

*Option 6: Group Discount*

\$620 per person	N/A
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Discount off member rate for 10 or more people from the same organization who register and pay at the same time with a single form of payment. Includes all catered events and online proceedings. A complete typed list of registrants, along with completed individual registration forms and a single payment, must be received by the preregistration deadline of **21 June**.

## PROFESSIONAL DEVELOPMENT

On 26–27 June, AIAA is offering the following professional development short courses in conjunction with the conference. Attend any short course and receive free registration to the conference (sessions only).

### **Basic Fluids Modeling with Surface Evolver** (Instructor: Steven Collicott)

The free Surface Evolver code has powerful unique capabilities for capillary fluids. Unfortunately, many have downloaded the code, run the fluids demos, and then are unable to advance to solving real problems in new geometries. In this short course Professor Collicott teaches how to be productive with Surface Evolver on your own. He aims to lead you up the “learning curve” for the code for a new era of productivity in science and engineering. The course teaches methods for the creation of new 3-D geometry definitions, including defining contact angle, symmetry boundaries, and diagnostic quantities. Methods for effective use of the code in new geometries, including assessing convergence, outputting desired data, and methods to adapt default volume, area, etc., computation methods to unique geometries are covered. Modeling axisymmetric and 2-D geometries are also taught.

### **Computational Heat Transfer (CHT) and Thermal Modeling** (Instructor: Dean S. Schrage)

The CHT course provides a detailed focus on the thermal analysis process and offers a unique analysis perspective by developing the concepts around practical examples. It is a computational course dedicated to heat transfer simulation. In the treatment of the general purpose advection-diffusion (AD) equation, the course material provides a strong introductory basis in CFD. The course promotes a multistep modeling paradigm from which to base computational heat transfer analysis. Seven lectures form a close parallel with the modeling paradigm to further emphasize the concepts. The present CHT course is also designed around an array of practical examples and contemporary simulation codes, employing InterLab sessions. It includes commercial grade meshing and analysis tools to promote continued study. The overall goal of the CHT course is to form a bond between theory and practice, emphasizing a definitive structure to the modeling process.

### **Modern Design of Experiments** (Instructor: Richard DeLoach)

Aerospace researchers with considerable subject-matter expertise who have had relatively little formal training in the design of experiments are often unaware that research quality and productivity can be substantially improved through the design of an experiment. Reductions in cycle time by factors of two or more in real-world aerospace research programs, with quality improvements of that same order, have resulted from the application of fundamental experiment design techniques taught in this course. Examples drawn from specific studies will illustrate quantitatively resource savings, quality improvements, and enhanced insights that well-designed experiments have delivered in various university, government, and industry aerospace programs. Computer software CDs included with the course (Design Expert) will be demonstrated.

### **Stability and Transition: Theory, Modeling, Experiments, and Applications** (Instructors: Hassan A. Hassan, Helen L. Reed, and William S. Saric)

Knowledge of transition is critical for accurate force and heating predictions and effective control (both transition delay and enhancement). This course reviews the roadmap to transition, including receptivity, attachment line, transient growth, stability, and breakdown; and presents a comprehensive and critical review of current methods used to determine the physics and onset of transition for a wide variety of 2D and 3D flows, both high- and low-speed. Tools reviewed include linear stability theory, parabolized stability equations, and direct numerical simulations. Guidelines for experiments and flight tests are reviewed. Then a comprehensive review of transition region models will be provided including algebraic/integral and differential models. In particular, an approach will be presented in which one calculates onset and extent of transition as part of the solution at a cost typical of turbulent flow calculations. Once the user specifies the transition mechanism, the eddy viscosity of the non-turbulent fluctuations is provided.

### **Verification and Validation in Scientific Computing** (Instructors: William L. Oberkampf and Christopher J. Roy)

The performance, reliability, and safety of engineering systems are becoming increasingly reliant on scientific computing. This short course follows closely the instructors’ new book *Verification and Validation in Scientific Computing* to be published by Cambridge University Press in 2010. The course deals with techniques and practical procedures for assessing the credibility of scientific computing simulations. It presents modern terminology and effective procedures for verification of numerical simulations and validation of mathematical models that are described by partial differential or integral equations. The approaches presented are applicable to commercial, corporate, government, and research computer codes. While the focus is on scientific computing, experimentalists will benefit from the discussion of techniques for designing and conducting validation experiments. A framework is providing for incorporating various error sources identified during the verification and validation process into the total simulation prediction uncertainty. Application examples are primarily taken from fluid dynamics, solid mechanics, and heat transfer.

Complete course outlines and author biographies can be obtained at [www.aiaa.org](http://www.aiaa.org) or by calling AIAA customer service at 800.639.2422.

### Option 7: 1st AIAA CFD High-Lift Prediction Workshop (HiLiftPW-1)

\$200      \$300      \$400

Registration includes workshop participation only. Conference registration is not included.

By 31 May      By 25 June      On-Site

### Option 8: Professional Development Registration

AIAA Member \$1095      \$1200      \$1275  
Nonmember \$1195      \$1300      \$1375

#### Extra Tickets

Tuesday Awards Luncheon \$50  
Monday Welcome Exhibit Reception \$60

Wednesday Lunch Exhibit Reception \$60  
Student Ticket Package (Food functions only) \$170  
Online Proceedings & After-Meeting DVD \$200

### Registration Hours

Saturday, 26 June 0730–1700 hrs (Courses & Workshop Only)  
Sunday, 27 June 1600–1900 hrs  
Monday, 28 June 0700–1700 hrs  
Tuesday, 29 June 0700–1700 hrs  
Wednesday, 30 June 0700–1700 hrs  
Thursday, 1 July 0700–1200 hrs

## AIAA Programs

### Hotel Reservations

AIAA has made arrangements for a block of rooms at the Hyatt Regency McCormick Place, 2233 S. Martin Luther King Drive, Chicago, IL 60616. Room rates are \$199 for single or double occupancy. Online and phone reservations are being accepted now.

A dedicated booking Web site has been created for this event so you can make, modify, or cancel your hotel reservations online, as well as take advantage of any room upgrades, amenities, or other services offered by the hotel. To access the Web site, click the following link: [https://resweb.passkey.com/Resweb.do?mode=welcome\\_ei\\_new&eventID=2216909](https://resweb.passkey.com/Resweb.do?mode=welcome_ei_new&eventID=2216909). Select the General Block or Government (for federal government employees only) in the "Who are you" drop down at the top of the Search Available Rooms block. You do not need an access code.

If you prefer to call in your reservations at 888.421.1442, please specify in advance the time and date of your arrival and departure and identify yourself as being with the AIAA conference. The rooms will be held for AIAA until **25 May 2010** and then released for use by the general public at the prevailing rates. A deposit of one night room and tax is required when booking your reservation. A major credit card can be used to secure the reservation.

*Federal Government Employees*—A portion of the room block is available at the federal government per diem. This rate is available to federal government employees only. You must show valid Government ID upon check-in.

### Meeting Site/Hotel Information

Chicago is a city of world-class status and unsurpassed beauty. Located on the shores of Lake Michigan in the heart of the Midwest, Chicago is home to world-championship sports teams, an internationally acclaimed symphony orchestra, renowned architecture, award-winning theater, lakefront parks, vibrant ethnic neighborhoods and much more.

It's no wonder that President Barack Obama and First Lady Michelle Obama, and nearly 3 million others, call Chicago home. For information about Chicago, go to [www.explorechicago.org](http://www.explorechicago.org).

### Hertz Car Rental Information

Hertz saves members up to 15% on car rentals. Discounts are available at all participating Hertz locations in the United States, Canada, and internationally where possible. For worldwide reservations, call your travel agent or Hertz directly at 800.654.2200 (U.S.) or 800.263.0600 (Canada), and mention the AIAA members savings CDP #066135, or visit [www.hertz.com](http://www.hertz.com) and enter the CDP #.

### Conference Sponsorship Opportunities

When your brand is on the line, AIAA sponsorship can raise the profile of your company and put you where you need to be. Available packages offer elevated visibility, effective marketing and branding options, and direct access to prominent decision makers from the aerospace community. Contact Cecilia Capece at [ceciliac@aiaa.org](mailto:ceciliac@aiaa.org) or 703.264.2570 for more details.

AIAA will no longer be publishing printed copies of registration forms. Registration forms are available for download on the main page of the event Web site at [www.aiaa.org/events/Chicago2010](http://www.aiaa.org/events/Chicago2010).



**Call for Associate Fellow Nominations**

Now is the time to start thinking about who is eligible for Associate Fellow.

**AIAA**  
The World's Forum for Aerospace Leadership

Associate Fellow candidates are people who have accomplished or been in charge of important engineering or scientific work, or who have done work of outstanding merit or have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics. Nominees must be AIAA Senior Members and have at least twelve years of professional experience.

Associate Fellow nominations are due **15 April 2010** and references are due **15 May 2010**.

To submit a nomination, please visit our Web site at [www.aiaa.org](http://www.aiaa.org).

## Program at a Glance

### **40th Fluid Dynamics Conference and Exhibit**

Adaptive Grid and Immersed Boundary Methods  
Aero-Optics in Fluid Dynamics  
Airfoil Flow Control III  
Awards Luncheon  
Bluff Body Separation Control I  
Computational Studies of Instability and Transition I  
Computational studies of Instability and Transition II  
Computational Studies of Turbulent Jets and Wake Flows  
Experimental Hypersonics  
Experimental Methods  
Experimental Studies of Turbulent Jets  
Flow Control in Fluid Dynamics  
Fluid Dynamics Award Lecture  
Fluid Structure Interaction  
High-Fidelity Analyses of Turbulent Boundary Layer Flows  
High-Order Methods in CFD  
High-Rate High-Angle Pitching Motions: Progress and Measurement and Modeling Hypersonic CFD Development (Invited)  
Hypersonic Flow Simulation  
Innovative Theoretical Analyses in Fluid Dynamics  
Instability and Transition—General  
Instability and Transition: High Speed Flows I  
Instability and Transition: High Speed Flows II  
Integrated Experimental & Numerical Studies  
Internal Flows I  
Internal Flows II  
Low Reynolds Number Flow Control and Gusts  
Microfluidic Devices and Systems  
Micro-Scale Thermofluidics (Invited)  
Multi-Phase and Chemically Reacting Flows  
Multidisciplinary Fluid Dynamics  
Numerical Methods in Fluid Dynamics  
Physics of Low Reynolds Number Airfoils and Wings I  
Physics of Low Reynolds Number Airfoils and Wings II  
Pitching, Plunging, and Rotating Wings  
FD/FC/PDL/APA Plasma Actuators and Aerodynamics V  
Plenary  
Shock-Wave/Boundary Layer Interactions  
Surface Roughness Impact on Transitional and Turbulent Boundary Layer Flows  
Transition Open Forum  
Turbulent Flow Experiments  
Turbulent Flows: DNS/LES  
Turbulent Flows: RANS and Hybrid Methods  
Unsteady Fluid Dynamics: Compressible Flows  
Unsteady Fluid Dynamics: General  
Unsteady Fluid Dynamics: Numerical Methods  
Vortex Dominated Flows: Airfoils and Wakes  
Vortex Dominated Flows: Jets and Geophysical Flows

### **10th AIAA/ASME Joint Thermophysics and Heat Transfer Conference**

Advances In Computational Heat Transfer  
AIAA/ASME Joint Thermophysics and Heat Transfer Award Lecture  
Applications of Computational Heat Transfer  
Computational Aerothermodynamics I: Planetary Entry  
Computational Aerothermodynamics II: Nonequilibrium Flows  
Computational Aerothermodynamics III  
Direct Simulation Monte Carlo Methods  
Electronic Systems Thermal Management  
Entry, Descent and Landing  
Environmental Effects on Surfaces

Experimental Aerothermodynamics  
Experimental Heat Transfer I  
Experimental Heat Transfer II  
Heat and Mass Transfer  
Heat Transfer in Turbomachinery and Propulsion Systems  
Integrated and Multidisciplinary Modeling and Simulation  
MEMS and Microfluidics  
Microscale and Nanoscale Transport Phenomena  
Nonequilibrium Flows I  
Nonequilibrium Flows II  
Nonequilibrium Radiation  
Numerical Heat Transfer  
Radiative Heat Transfer  
Thermal Control, Management, and Protection Systems

### **5th Flow Control Conference**

Airfoil Flow Control I  
Airfoil Flow Control II  
Bluff Body Separation Control II  
Bluff Body Separation Control III  
Boundary Layer Control I  
Boundary Layer Control II  
Closed Loop Investigations of Flow Control  
Flow Control Actuators  
High-Speed Flow Control  
Internal Flow Control I  
Internal Flow Control II  
Jet Flow Control  
Numerical Investigations of Active Flow Control  
Plasma Actuators  
FD/FC/PDL/APA Plasma Actuators and Aerodynamics I  
FD/FC/PDL/APA Plasma Actuators and Aerodynamics IV  
Poster Session: Progress in Flow Control  
Testing Capabilities for Flow Control Panel Discussion

### **28th AIAA Applied Aerodynamics Conference**

4th CFD Drag Prediction Workshop (DPW) Results I  
4th CFD Drag Prediction Workshop (DPW) Results II  
4th CFD Drag Prediction Workshop (DPW) Results III  
Advanced Transport Aircraft for 2030 & Beyond I (Invited)  
Advanced Transport Aircraft for 2030 & Beyond II (Invited)  
Aerodynamic Design Methodologies & Optimization Techniques I  
Aerodynamic Design Methodologies & Optimization Techniques II  
Aerodynamic-Structural Dynamics Interaction  
Airfoil/Wing/Configuration Aerodynamics  
Applied Aerodynamic Award Lecture  
Ares Launch Vehicle Aeroelasticity  
CFD Applications in Aerodynamics I  
CFD Applications in Aerodynamics II  
CFD Applications in Aerodynamics III  
Environmentally Friendly & Efficient Aerodynamics & Enabling Technology  
Flight in Nature & Micro Air Vehicles I  
Flight in Nature & Micro Air Vehicles II  
Flight in Nature & Micro Air Vehicles III  
Flow Control—Applied Aerodynamics  
Fluid Dynamic Challenges in Flight Mechanics  
High Lift & High Angle of Attack Aerodynamics  
Icing Effects on Vehicle Aerodynamics  
Innovative Aerodynamic Concepts & Applications  
Rotorcraft Aerodynamics I  
Rotorcraft Aerodynamics II  
Shock Boundary Layer Interaction (SBLI)  
Stability & Control Prediction Methods for NATO Air & Sea Vehicles I

# AIAA Programs

Stability & Control Prediction Methods for NATO Air & Sea Vehicles II  
 Stability & Control Prediction Methods for NATO Air & Sea Vehicles III  
 Transonic, Supersonic, & Hypersonic Aerodynamics  
 Unsteady Aerodynamics I  
 Unsteady Aerodynamics II  
 Weapons Aerodynamics & Store Separation  
 Wind Tunnel and Flight Testing Aerodynamics I  
 Wind Tunnel and Flight Testing Aerodynamics II  
 Wind Turbine Aerodynamics

## 27th AIAA Aerodynamic Measurement and Ground Testing Conference

Absorption and Emission Spectroscopy  
 Ground Test Facilities Capability Sustainment I (Invited)  
 Ground Test Facilities Capability Sustainment II (Invited)  
 Ground Test Investigations  
 Ground Test Investigations, Including Force Measurement  
 New/Improved Ground Test Facilities  
 New/Improved High Speed Ground Test Facilities  
 Nonintrusive Diagnostics for Test-Cell/Tunnel Applications  
 Presentations from the 7th International Strain Gage Balance Symposium  
 Pressure-Sensitive Paint and Other Surface Measurements

Pressure-Sensitive Paint: Developments and Applications  
 Raman Scattering Techniques  
 Shadowgraphy and Schlieren  
 Statistical Applications in Ground Testing (Invited)  
 Velocimetry and Imaging  
 Virtual Presence in Facilities and Laboratories (Invited)

## 41st Plasmadynamics and Lasers Conference

Chemical Oxygen Iodine Lasers  
 Diode and Exciplex Pumped Alkali Lasers  
 Electric Discharge Oxygen Iodine Lasers and Special Topics  
 FD/FC/PDL/APA Plasma Actuators and Aerodynamics II  
 FD/FC/PDL/APA Plasma Actuators and Aerodynamics III  
 MHD Reentry and Hypersonic Flight  
 MHD Studies and Concepts  
 Modeling of MHD and Plasma Flows  
 Aero-Optics I  
 Plasma Characterization I  
 Plasma Characterization II  
 Plasmadynamics and Lasers Award Lecture

Visit [www.aiaa.org/events/Chicago2010](http://www.aiaa.org/events/Chicago2010) for the most up-to-date list of speakers and program information.



**INSIDE AEROSPACE**  
An International Forum for Aviation and Space Leaders

**11-12 May 2010**  
Hyatt Regency Crystal City  
Arlington, Virginia

## Making a Difference: Aerospace Leadership for Energy and Environmental Challenges

The Forum will cover the follow topics:

**DAY 1: Energy and the "Greening" of Aviation**

- Aviation – Current Energy Challenges
- Energy Policy – Current and Needed
- Conserving Energy through Operations
- Energy Efficiency through Technology

**DAY 2: Aerospace Leadership for Climate Change Understanding, Mitigation, and Adaptation**

- Climate Observations and Policies – The Current Status
- Climate Change Mitigation Through Greenhouse Gas Reductions – Issues in Observations and Compliance Monitoring
- Enabling Effective Climate Monitoring and Emission Tracking – The Next 5 Years
- Providing Operational Climate Monitoring and Mitigation Verification – Beyond 5 Years



**EARLY BIRD REGISTRATION DEADLINE: 12 APRIL 2010**  
 For the latest program and registration information visit: [www.aiaa.org/events/insideaerospace](http://www.aiaa.org/events/insideaerospace)

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