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Dawn Mission Outreach E-News, 14th Edition  
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May 2007

### **DAWN MISSION UPDATE: COMPREHENSIVE PERFORMANCE TESTS COMPLETED**

The spacecraft successfully completed two weeks of comprehensive performance tests. In these tests, each engineering subsystem and each instrument is operated extensively to verify it continues to function as required. The first run of the same tests was conducted in 2006, so engineers can verify that now that the spacecraft is in final preparation for launch, no unexpected changes have occurred as a result of the environmental tests or the shipment of the spacecraft.

As the Dawn mission progresses toward launch, we invite you to stay up-to-date by visiting:  
<http://dawn.jpl.nasa.gov/mission/status.asp>

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### **REGISTER NOW FOR THE DAWN LAUNCH EDUCATOR CONFERENCE**

Visit Cape Canaveral, see the Dawn spacecraft launch, and discover a host of exciting educational activities to spark students' interest in space science. Join us at Cape Canaveral, Florida June 28<sup>th</sup>–June 30<sup>th</sup>. Conference participants receive a behind-the-scenes bus tour of Kennedy Space Center, engaging sessions featuring Dawn mission and science team members, a VIP launch pass, and more. Interested educators must register by May 31<sup>st</sup>. Space is limited. For more information about the conference and to register online, go to: [http://dawn.jpl.nasa.gov/education/educ\\_conf.asp](http://dawn.jpl.nasa.gov/education/educ_conf.asp)

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### **NEWLY RELEASED DAWN MISSION VIDEO**

Journey into the heart of the asteroid belt with Leonard Nimoy as your guide. Discover how Dawn will not only offer a look into the distant past—revealing clues of our solar system's origins—the mission will also provide valuable information for the future of space exploration. Access this brilliantly animated 13-minute video online at: <http://dawn.jpl.nasa.gov/multimedia/index.asp>

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### **MEDAL AWARDED TO DAWN CO-INVESTIGATOR**

Dr. Angioletta Coradini was recently awarded the prestigious David Bates Medal by the European Geosciences Union (EGU) "in recognition of her important and wide ranging work in planetary sciences and Solar System formation, and her leading role in the development of space infrared instrumentation for planetary exploration." Dr. Coradini leads the team responsible for an essential instrument on board the Dawn spacecraft, the Visual and Infrared Imaging Spectrometer (VIR). To read more about Dr. Coradini's work, visit: [http://dawn.jpl.nasa.gov/people/coradini\\_award.asp](http://dawn.jpl.nasa.gov/people/coradini_award.asp)

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### **MEET DAWN'S PROJECT MANAGER**

"It is by sheer accident I got into the space business," explains Dawn Project Manager Keyur Patel. Although he studied airplanes in college, Patel joined the Jet Propulsion Laboratory (JPL) as a junior in college and has "never looked back at an airplane yet." Two decades later, Keyur Patel has developed extensive experience working on a number of space missions including Voyager, Mars Observer, and Deep Impact—to name a few. Learn more about Patel's exciting JPL work history by reading his interview at: <http://dawn.jpl.nasa.gov/people/patel/interview.asp>

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### **AN INSIDE PERSPECTIVE OF THE DAWN MISSION**

“The Dawn spacecraft has completed its longest terrestrial journey on its path to asteroid Vesta and dwarf planet Ceres,” announces Dr. Marc Rayman, Dawn’s Project System Engineer, referring to the spacecraft’s recent road trip from the Naval Research Laboratory in Washington, DC to Astrotech Space Operations in Titusville, Florida, near Cape Canaveral. The latest Dawn Journal entry details the numerous tests, checks, and rechecks the spacecraft has undergone in preparation for launch. For more information, read the Dawn Journal at: [http://dawn.jpl.nasa.gov/mission/journal\\_4\\_07.asp](http://dawn.jpl.nasa.gov/mission/journal_4_07.asp)

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### **DAWN’S INTERNATIONAL PARTNERS AND THE SPACECRAFT INSTRUMENTS**

The Dawn mission was conceived and implemented here in the USA, but it is an international effort. The Max Planck Institute for Solar System Research (Max-Planck-Institut für Sonnensystemforschung), with contributions from the German Aerospace Agency Institute for Planetary Research (DLR-Institut für Planetenforschung) and the Institute for Data Technology and Communication Networks (Institut für Datentechnik und Kommunikationsnetze), constructed the framing cameras, the main imaging cameras for Dawn, which will bring us stereo views of the surfaces of Vesta and Ceres. The Italian National Institute for Astrophysics (Istituto Nazionale di Astrofisica) built the Visual and Infrared (VIR) Spectrometer. Back at home, scientists and engineers at the Los Alamos National Laboratory (LANL) built GRaND, the Gamma Ray and Neutron Detector instrument suite. For images and links to technical details, visit: <http://dawn.jpl.nasa.gov/technology/index.asp>

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### **FEATURED CLASSROOM ACTIVITY: DESIGN AN ION ENGINE INTERACTIVE SIMULATION**

Discover how the Dawn spacecraft will use ion propulsion in its journey to the asteroid belt. This interactive simulation, developed by John Brophy and Art Hammond from the Jet Propulsion Laboratory, features a series of engaging activities that first teach students some basics about electrical charges and then challenge them to apply their learning by designing a virtual ion engine. The simulation can be accessed at: [http://dawn.jpl.nasa.gov/mission/ion\\_engine\\_interactive/index.html](http://dawn.jpl.nasa.gov/mission/ion_engine_interactive/index.html)

Use the following student handouts to facilitate the activities:

- Attractive and Repulsive Forces in Ion Jet Propulsion Engines—for use with the tutorial “Positive and Negative Charges” and “Charge Simulator.” Available at:  
[http://dawn.jpl.nasa.gov/DawnClassrooms/2\\_ion\\_prop/exploration/2\\_sa\\_forces.pdf](http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/exploration/2_sa_forces.pdf)  
[http://dawn.jpl.nasa.gov/DawnClassrooms/2\\_ion\\_prop/exploration/3\\_srs\\_forces.pdf](http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/exploration/3_srs_forces.pdf)
- Ion Propulsion Engine Simulation—for use with the simulation “Design an Ion Engine.” Available at: [http://dawn.jpl.nasa.gov/DawnClassrooms/2\\_ion\\_prop/assess/2\\_sa\\_assess\\_ion.pdf](http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/assess/2_sa_assess_ion.pdf)

The full module with teacher guides, additional readings, and activities can be viewed at:

[http://dawn.jpl.nasa.gov/DawnClassrooms/2\\_ion\\_prop/index.asp](http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/index.asp)

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### **UPCOMING EDUCATION AND PUBLIC OUTREACH (E/PO) EVENTS**

Mark your calendars for the Jet Propulsion Laboratory’s (JPL) Open House in Pasadena, California on May 19<sup>th</sup> and 20<sup>th</sup>! Learn about Dawn’s cutting-edge science and technology from mission team members who will be on hand to share information about this exciting journey to the asteroid belt. For more information about the JPL Open House, go to: <http://www.jpl.nasa.gov/psa/oh.cfm>

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### **HOST YOUR OWN DAWN LAUNCH EVENT**

Are you planning a summer science event? Join a number of informal science facilities—a public library, a meteorite outreach program, and science centers—who are hosting Dawn Launch Events this summer. Review Dawn’s educational materials and choose the most suitable activities for your event:

- *Find A Meteorite* <http://dawn.jpl.nasa.gov/Meteorite/index.asp>
- *Career Connections* <http://dawn.jpl.nasa.gov/people/careers/index.asp>

- Dawn Kids activities <http://dawn.jpl.nasa.gov/DawnKids/index.asp>
- Clickworkers <http://dawn.jpl.nasa.gov/clickworkers/index.asp>
- The History and Discovery of Asteroids module  
[http://dawn.jpl.nasa.gov/DawnClassrooms/1\\_hist\\_dawn/index.asp](http://dawn.jpl.nasa.gov/DawnClassrooms/1_hist_dawn/index.asp)
- Structure and Properties of Matter: Ion Propulsion module  
[http://dawn.jpl.nasa.gov/DawnClassrooms/2\\_ion\\_prop/index.asp](http://dawn.jpl.nasa.gov/DawnClassrooms/2_ion_prop/index.asp)
- Materials from the Amateur Observers' Program <http://dawn-aop.astro.umd.edu/>

If you provide feedback, you will receive a special thank you gift! To sign up, contact Lisa Maxfield at [lmaxfield@mcrel.org](mailto:lmaxfield@mcrel.org)

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**ASK A SCIENTIST**

Have a question about the Dawn mission and want to communicate directly with a member of the Dawn mission team? Click on the "Ask a Scientist" link located at the bottom of the Dawn Web site or simply go to: [http://www.dawn-mission.org/ask\\_scientist/mailToDawnScientist.asp](http://www.dawn-mission.org/ask_scientist/mailToDawnScientist.asp)

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**TELL US WHAT YOU THINK**

Continually seeking ways to improve the mission Web site, Dawn Education and Public Outreach is eager to receive your feedback. Please share your thoughts by completing a brief survey at: <http://survey.mcrel.org/scripts/qweb.cgi?4CFEF46>

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**SUBSCRIPTION INFORMATION**

Please forward this e-mail to others interested in NASA missions. New subscribers may join the Dawn mission e-news mailing list on our Web site at: [http://dawn.jpl.nasa.gov/DawnMedia/e\\_news.asp](http://dawn.jpl.nasa.gov/DawnMedia/e_news.asp)

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Dawn Mission Outreach E-News features information about the mission, its outreach Web site, and products, services, and materials available from the Dawn Education and Public Outreach (E/PO) team. Dawn is the ninth Discovery mission in NASA's Science Mission Directorate and is a collaborative partnership made up of the University of California, Los Angeles; Jet Propulsion Laboratory; Orbital Sciences Corporation; Los Alamos National Laboratory; German Aerospace Center; Max Planck Institute for Solar System Research; Italian Space Agency; and Italian National Institute of Astrophysics. Dawn outreach materials are developed under contract by Mid-continent Research for Education and Learning (McREL), Denver, CO.