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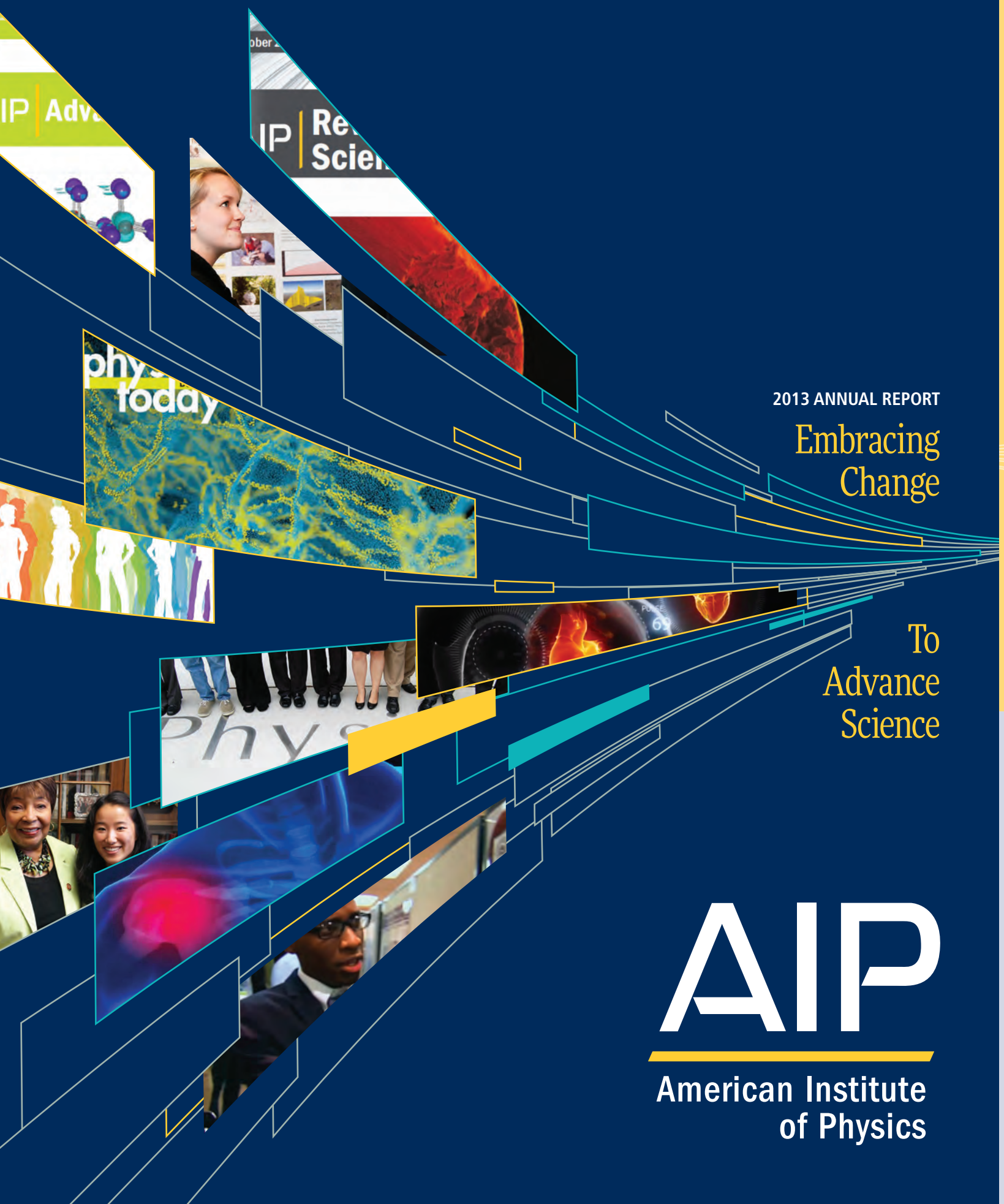
2013 ANNUAL REPORT

Embracing Change

To
Advance
Science

AIP

American Institute
of Physics



Embracing Change To Advance Science

One of the most fascinating things about science is that it enables change by helping us to develop new technologies and new ways of doing things, improving our quality of life. By embracing change, we are open to learning more and are able to adapt more quickly to changing needs. By driving change, we can strategically apply our resources to address specific problems or chart new directions. The American Institute of Physics (AIP) advances change, every day, by supporting the education, research endeavors, and professional growth of the physical sciences community.

As an organization, AIP experienced significant change in 2013—change that will help the Institute to succeed its mission to advance and diffuse the knowledge of physics and allied sciences. In February, the AIP Governing Board created a new wholly owned subsidiary, AIP Publishing LLC, to carry out the Institute's publishing mission. By creating a new business entity to focus solely on scholarly publishing, the board intends for AIP journals and those of AIP Member Society publishing partners to grow in new directions, in scientific scope and global reach. The Institute itself is now focused on providing resources in support of its Member Societies, the physics community, and the general public.

In the latter part of the year, AIP opened up its membership, welcoming the American Meteorological Society (AMS) as its first new Member in 27 years. AMS adds a new dimension to the AIP umbrella of organizations. The American Geophysical Union changed its status from a Member to an Affiliated Society. For AIP, this change in membership composition signals that the Institute is now open to consider new membership opportunities with other societies whose missions align with AIP.

Programs for the physical sciences community and for the public run by AIP, often in partnership with its Member Societies, continued to thrive in 2013. This report provides a sampling of the successes over the past year, including enhanced offerings for those in the corporate sector and science historians, and new developments in science education and publishing policy. We invite interested parties to learn more, by visiting AIP's new website at www.aip.org.



Louis J. Lanzerotti
Chair, AIP Governing Board



H. Frederick Dylla
Executive Director & CEO

Member Societies

AIP is one of the largest federations of physical scientists in the world, serving 120,000 members of its ten [Member Societies](#).



The American Meteorological Society, the premier scientific society for meteorology and related atmospheric, oceanographic and hydrologic sciences, joined AIP in 2013. AMS membership is 13,300 strong, with almost equal representation from the academic, private and government sectors.

As an Affiliated Society, AMS had a history of partnering with AIP on outreach, statistics, and media programs. Now, as AIP's newest Member Society, AMS and its members will get full benefits from AIP, including *Physics Today* and collaborative opportunities in areas such as education, history, and public policy. AIP was also pleased to welcome the [Health Physics Society](#) as its newest Affiliate.

Member Society interests and resource needs influence the core scope of AIP's offerings to the community, including statistical research in education and employment, news and media, history, student services, careers, government relations, and outreach to industry.

Member Societies and year of joining AIP

AAPM	American Association of Physicists in Medicine, 1973
AAPT	American Association of Physics Teachers, 1932
AAS	American Astronomical Society, 1966
ACA	American Crystallographic Association, 1966
AMS	American Meteorological Society, 2013
APS	American Physical Society, 1931
ASA	Acoustical Society of America, 1931
AVS	Science & Technology of Materials, Interfaces, and Processing, 1976
OSA	The Optical Society, 1931
SOR	The Society of Rheology, 1931

AIP also has 24 Affiliated Societies

Other Member Organizations

Sigma Pi Sigma (the physics honor society)
Society of Physics Students
Corporate Associates



Programs for the Physical Sciences

AMPLIFYING SCIENCE'S NATIONAL VOICE

Coordinated messaging on Capitol Hill

With clear, concise, consistent messaging, AIP helps bring the voice of its Member Societies to policy makers. Sustained science funding was the major focus of congressional visit days. AIP's government relations team accompanied AVS and AAS members, and supported APS's efforts, to convey this shared priority to members of Congress. AAPT and AIP also arranged for the 2013 U.S. Physics Team to meet with their members of the House and Senate to show Congress how the best U.S. high school students are competitive on the world stage of the International Physics Olympiad.

Expressing a strong commitment to Department of Energy national laboratories, AIP also assisted the National User Facility Organization with its annual exhibit and scientist visits to Capitol Hill.

Opening research through public access

AIP is a major proponent of and contributor to CHORUS, the [Clearinghouse for the Open Research of the United States](#), introduced as a pilot program in October. CHORUS is the publishing community's solution to the White House Office of Science and Technology Policy's directive to funding agencies, requiring that the results of research funded by the federal government be made freely available to the public. Because CHORUS leverages existing technology, it can be offered at no charge to agencies and the research community.

Science, for a better nation

AIP celebrated the 25th anniversary of its [Congressional Science Fellowship program](#). At the annual Assembly of Society Officers, past fellows explained how their congressional fellowships benefited the nation by bringing science knowledge to Congress. ASA is a valued partner in this program. In addition, AAS supports the [AIP State Department Fellow](#).



Current and past science policy fellows at the 25th Anniversary of the AIP congressional program.

With help from the APS Office of Public Affairs, AIP's Society of Physics Students placed an undergraduate summer intern, Dayton Syme of Idaho State University, at the Department of Education (ED). This successful venture led to the creation of the new [APS/AIP STEM Education Policy Fellowship](#), the first such fellowship at ED. Julia Mundy, Cornell PhD and Teach for America alumna, was selected as the first fellow to fill this role.

EXTENDING REACH THROUGH COLLABORATION

Inside Science TV goes international

Together with four Member Society (ASA, APS, AMS, and AVS) and three Affiliated Society (Biophysical Society-BPS, Materials Research Society, and American Chemical Society) partners, AIP increases public scientific literacy. [Inside Science](#) provides editorially independent science news for mainstream audiences. In 2013, Inside Science TV (ISTV) expanded its international reach by licensing content to Al Jazeera and Da Vinci Learning, two international media outlets. Forty TV stations across the USA subscribe to ISTV.

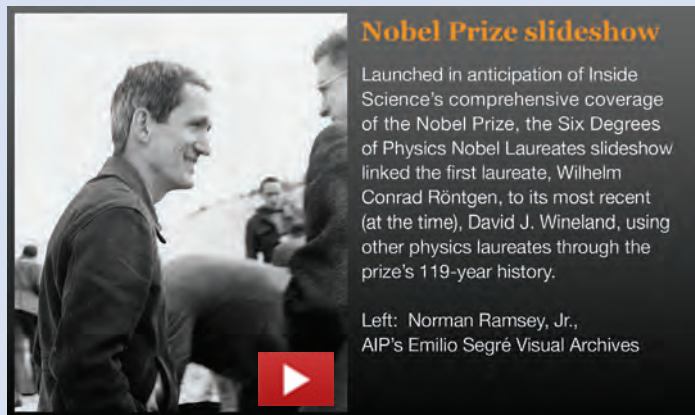


ISTV underwriter ASA uses ISTV to enhance its outreach efforts.

Physics Today, AIP's flagship magazine sent to all 120,000 members of AIP's Member Societies, saw its impact factor increase by 19%, reaching an all-time high of 6.76. *Physics Today* exhibited at many Member Society meetings and conducted surveys to better understand—and ultimately to better serve—members' interests.



Programs for the Physical Sciences



WORKING FOR THE SCIENCE COMMUNITY

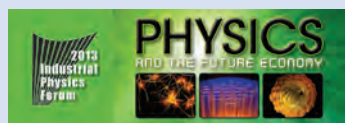
Trending now

In 2013, the [AIP Statistical Research Center \(SRC\)](#) reported that the number of physics degrees conferred in 2012 set several all-time highs:

- > All physics bachelor's awarded in the U.S. (6766)
- > Physics bachelor's earned by women (1348)
- > All physics PhDs awarded in the U.S. (1762)
- > Physics PhDs earned by women (354)
- > Physics PhDs earned by Hispanic Americans (33)

In addition, U.S. citizens received the majority of PhDs awarded in the U.S.

The economy—Brought to you by physics



Physical scientists working in industry make scientific advancements accessible to us all and drive modern industry. It was a banner year of offerings

for those in the corporate sector, with AIP [Industrial Physics Forums](#) and networking events at major meetings of the APS, AGU, AVS, and SOR. *Physics Today* launched a new online feature called "Enterprise," a source of news and commentary about physics in the private sector. The final report of the History of Physics Entrepreneurs study, *Physics Entrepreneurship and Innovation*, was published and is available online.

Science—It's what's for breakfast

AIP's media team works with Member and Affiliated Societies, as well as AIP Publishing, to bring newsworthy research findings to the national and international media and the public.

This year AIP worked to get exciting research presented at scientific society meetings of APS, ASA, AVS, BPS, and OSA into mainstream media through news releases, press room management, photo and video galleries, and—new in 2013—webcasts.

$$l = \frac{c_0}{2[\omega]_r} \left[\frac{c_0 \delta^2}{[\omega]_r h D^2} \pm \sqrt{\left(\frac{c_0 \delta^2}{[\omega]_r h D^2} \right)^2 - M^2} \right]$$

$$St_3 \sim M_x^{-1} \left(\frac{\delta}{D} \right) \left(\frac{\delta}{h} \right)^{\frac{1}{2}} \left(\frac{\delta}{l} \right)^{\frac{1}{2}}$$

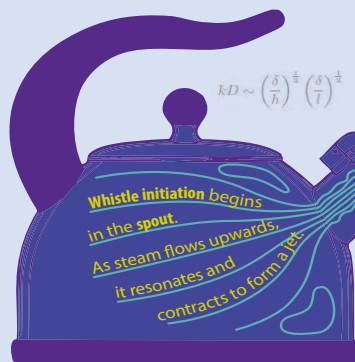
$$V = \frac{\pi D^2 h}{4}$$

$$\Delta = \frac{\pi \delta^2}{4}$$

$$kD \sim \left(\frac{\delta}{h} \right)^{\frac{1}{2}} \left(\frac{\delta}{l} \right)^{\frac{1}{2}}$$

$$[\omega]_r = \omega_0 \sqrt{1 - \left(\frac{MD}{2\delta} \right)^2 \frac{h}{l}}$$

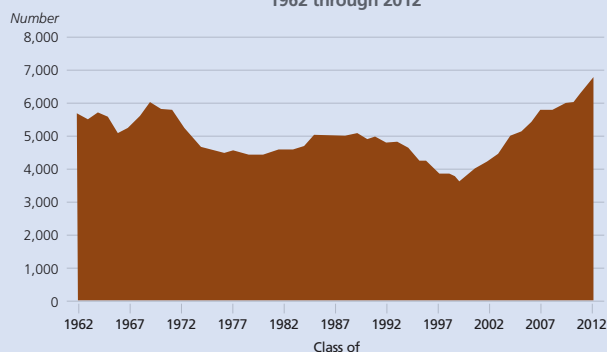
$$[\omega]_i = \frac{Mc_0}{2l}$$



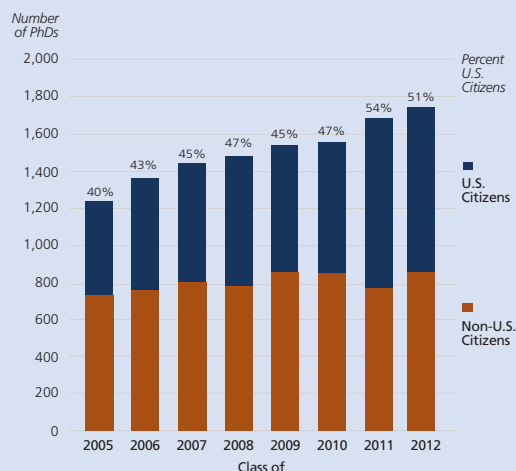
Source: Henrywood and Agarwal, "The Aeroacoustics of a Steam Kettle", *Physics of Fluids* 25, 107101 (2013).

This infographic illustrates researchers' work in fluid dynamics of the teakettle and the two mechanism process of sound production.

Physics Bachelor's Produced in the U.S.
1962 through 2012



Physics PhDs Awarded in the U.S.



The SRC continues its collaborations with Member Societies, including its work with AAPT that resulted in reports about physics faculty members in two-year colleges and its work with AAS that resulted in an NSF grant to complete the longitudinal study of astronomy graduate students.



SPS Council members demonstrate the properties of thin films with soap bubbles at the H Street Festival in Washington, DC.

Engendering the love of learning

The [Society of Physics Students](#) (SPS)—the professional society for undergraduate physics students and their mentors—has 4200 members in 700 chapters nationwide and some international. Members of Sigma Pi Sigma, the physics honor society, fund SPS student scholarships, awards for physics outreach and research projects, internships, and travel grants to present research at Member Society meetings. SPS drew hundreds of students to meetings in 2013, including those of AAPT, AAS, APS, and OSA, by hosting contributed and invited paper sessions, receptions, and special social events. At the APS March Meeting in Baltimore alone, more than 150 undergraduates presented in oral and poster sessions.

The SPS National Council adopted a [statement](#) on the importance of outreach, emphasizing that engaging the community inspires scientific literacy while promoting public understanding of the benefits of physics education and research.

Their stories become our history

Oral History Interviews



Dr. Nancy G. Roman
By David DeVorkin,
August 19, 1980,
with audio clip

For more than 50 years, AIP has interviewed and preserved the stories of outstanding physical scientists, most of them Member Society members. Archivists at the [Niels Bohr Library & Archives](#)

achieved a major milestone in 2013, completing a four-year project to put over 1000 of its oral histories online. This NEH-funded project made interviews with luminaries like [Niels Bohr](#), [Paul Dirac](#), [Werner Heisenberg](#), [Richard Feynman](#), and hundreds of others globally accessible. Staff also gave workshops on conducting oral histories at APS and ASA meetings, and awarded grants to produce new interviews.

Astronomer Virginia Trimble initiated an endowment for AIP's science heritage lecture series in honor of her father, Lyne Starling Trimble; the series now bears his name.



Virginia Trimble in her office, 1975. Credit: AAPT, courtesy of the Emilio Segrè Visual Archives

Careers that align with vocation

A first of its kind, the *Careers Toolbox for Undergraduate Physics Students* was developed to help students find jobs in STEM careers upon graduation. As part of the NSF-funded [Career Pathways Project](#), the toolbox will be used in workshops throughout the U.S., teaching students to articulate how their knowledge and skills attained through physics make them sought-after potential employees. Students also learn about other aspects of the job search, such as resume building and networking.



The [Career Network](#) team managed operations, marketing, and customer service for the online job sites of its partners (AAPM, AAPT, APS, AVS, the IEEE Computer Society, Physics Today, and SPS), with more than 2300 jobs posted and 4500 new resumes added to its database. New in 2013, the Career Network invested in professional development materials for science and engineering job seekers.

Building a community of scholars for the future

The [Center for History of Physics](#) teamed up with the Philadelphia Area Center for the History of Science to revive annual conferences for early-career historians of physics. The Center also worked with the History of Science Society and H-Net to create a new forum and online community for historians.



Graduate research assistant Emily Margolis and SPS intern Fiona Muir created the online [Teacher's Guide on Women in Physics, Astronomy, and Related Disciplines](#).

The American Institute of Physics is a federation of scientific societies in the physical sciences, representing scientists, engineers, and educators. AIP offers authoritative information, services, and expertise in physics education and student programs, science communication, government relations, career services for science and engineering professionals, statistical research in physics employment and education, industrial outreach, and the history of physics and allied fields. AIP publishes *Physics Today*, the most influential and closely followed magazine of the physics community, and is also home to the Society of Physics Students and the Niels Bohr Library and Archives. AIP owns AIP Publishing LLC, a scholarly publisher in the physical and related sciences. www.aip.org

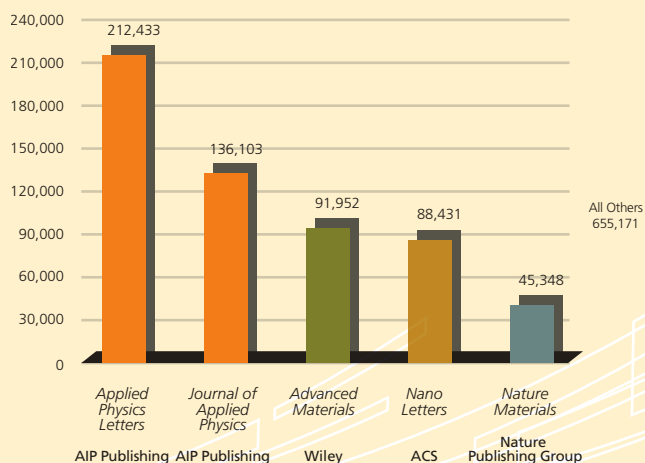


In a strategic move to increase service to global researchers and value to library customers worldwide, the AIP Governing Board created AIP Publishing LLC in February 2013. This separate, but wholly owned, not-for-profit subsidiary supports the scientific and educational mission of AIP through scholarly publishing activities in the physical sciences. AIP Publishing also works with Member Society and other publishing partners to help them advance their publishing missions. John Haynes is chief executive officer.

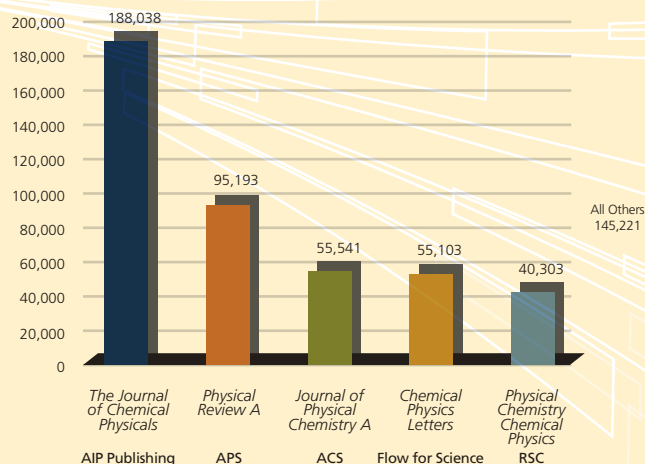
Commitment to quality

AIP Publishing is committed to publishing the **highest quality research** in the physical sciences. With nearly 350,000 total citations in the category of Applied Physics in 2012, *Applied Physics Letters* and the *Journal of Applied Physics* ranked first and second in total citations, earning more than one quarter of the total citations in this category. In the same year, *The Journal of Chemical Physics* ranked first in Atomic, Molecular & Chemical Physics with more than 188,000 citations—nearly twice as many as its closest competitor.

2012 Journal Citation Reports® – Physics, Applied



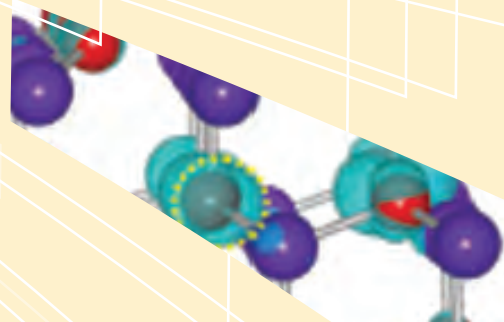
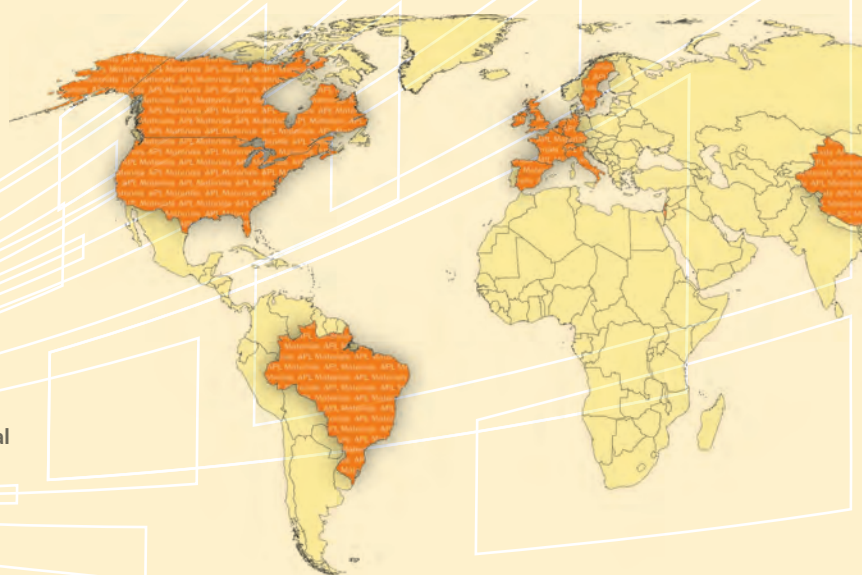
2012 Journal Citation Reports® – Physics, Atomic, Molecular & Chemical



New, open access title for cross-disciplinary materials scientists

Launched in June, *APL Materials* is an open access journal featuring original research on significant topical issues within the field of materials science, including nanomaterials and nanostructures, electronic, magnetic, and optical materials, organic materials, polymers, biomaterials, energy and environmental materials, carbon and amorphous materials, and general functional materials. The new journal, led by Judith MacManus-Driscoll of the University of Cambridge, features a geographically diverse editorial advisory board, selected to encourage submissions and publications from the strongest research institutions around the world.

APL Materials published nearly 100 articles from 19 countries in its first seven months



Satisfying the need for speed

As the pace quickens in international research, speed to publication is becoming more important to researchers in all disciplines. AIP Publishing undertook a series of strategic moves to lower the time-to-publication for its suite of 17 peer-reviewed publications, with impressive results. In the span of one year, the average number of days from submission-to-publication dropped from 120 days to 105 days. One of its largest titles, *Journal of Applied Physics*, saw the most dramatic improvement, from 142 days in 2012 to 95 days in 2013 on average—a drop of over 33%.

All AIP
Publishing Journals

13%

Drop in Time
to Publication

Journal of
Applied Physics

33%

Drop in Time
to Publication

Biomicrofluidics
Fundamentals, Perspectives & Applications

25%

Drop in Time
to Publication

Scitation

Journals for AIP Publishing and Member Society publishing partners found a new home in 2013 on AIP's new **Scitation platform**. Released in October, the platform hosts more than 800,000 research articles from journals, proceedings, standards, and magazines covering a broad range of topics spanning physics, chemistry, geosciences, engineering, acoustics, and more. Researchers benefit from more effective discovery with the implementation of the new 7500+ term AIP Thesaurus, article-level metrics for AIP Publishing journals, and improved author and institution disambiguation—all designed to make the research process faster and more efficient.

800,000+
Articles,
Reviews &
Letters

80+
Years of
Seminal
Research

1,200
Conference
Proceedings



7,500+
Term AIP
Thesaurus

Individual
Article
Metrics

Author &
Institution
Disambiguation

AIP Publishing LLC is a scholarly publisher in the physical and related sciences, providing the global science community with a comprehensive collection of highly cited, peer-reviewed scientific information. Accessed by researchers at nearly 4000 institutions worldwide, AIP Publishing's portfolio of 17 journals includes prestigious titles such as *Applied Physics Letters*, *Journal of Applied Physics*, and *The Journal of Chemical Physics*, and the AIP Conference Proceedings. AIP Publishing is a wholly owned subsidiary of the American Institute of Physics, and publishes on behalf of several of AIP's Member Societies and other publishing partners. <http://journals.aip.org>

Consolidated Financial Overview

(\$ in thousands)	2012	2013
Investments	\$141,373	\$145,218
Total Assets	\$181,429	\$193,473
Unrestricted Net Assets	\$123,835	\$123,470
Annual Investment Return	13.8%	11.2%
Total Revenue	\$71,988	\$70,567
Publishing Center, Net	\$15,418	\$12,325
Physics Resources Center, Net	(\$12,740)	(\$11,682)
Net Operating Revenue	\$3,630	\$2,373

Locations

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AIP Publishing Beijing Office

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AIP Officers

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Governing Board Chair

H. Frederick Dylla
Executive Director & CEO

Catherine O'Riordan
Vice President, Physics Resources

Catherine "Gigi" Swartz
Treasurer & CFO

Theresa Braun
Vice President, Human Resources

Judith Flippen-Anderson (as of 9/13)
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Jill Marshall (AAPT)
*Kevin Marvel (AAS)
Christine McEntee (AGU)
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*Charles Schmid (ASA)
Joseph Serene (APS)
Neal Shinn (AVS)
Scott Sommerfeldt (ASA)
Gene Sprouse (APS)
Gay Stewart (AAPT)
Hervey (Peter) Stockman (AAS)
Michael Turner (APS)

*Identifies members of the 2013 Executive Committee

John Regazzi
Alan Singleton
Charles Schmid (ASA)
Greg Tananbaum

AIP Publishing Publications

AIP Advances
AIP Conference Proceedings
APL Materials
Applied Physics Letters
Applied Physics Reviews
Chaos
Biomechanics
The Journal of Chemical Physics
Journal of Applied Physics
Journal of Mathematical Physics
Journal of Renewable and Sustainable Energy
Journal of Physical and Chemical Reference Data
Low Temperature Physics
Physics of Fluids
Physics of Plasmas
Review of Scientific Instruments

Chinese Journal of Chemical Physics,
co-published with the Chinese Physical Society
Theoretical and Applied Mechanics Letters,
co-published with the Chinese Society for
Theoretical and Applied Mechanics
The Journal of Laser Applications,
co-published with the Laser Institute of America

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Robert Doering (at large)
*Michael Duncan (OSA)
David Ernst (at large)
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*Judith Flippen-Anderson (ACA)
*Brian Fraser (AGU)
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Timothy Grove (AGU)
Mark Hamilton (ASA)
Paul Kelley (OSA)
Angela Keyser (AAPM)
James Kirby (AGU)
*Kate Kirby (APS)
Frank Krause (AGU)

AIP Publications

Physics Today
Computing in Science & Engineering
(jointly with IEEE Computer Society)
AIP Matters, newsletter
*Graduate Programs in Physics, Astronomy,
and Related Fields*
History of Physics, newsletter
FYI, science policy news bulletin
Focus on, statistical reports
Journal of Undergraduate Research
(Society of Physics Students)
SPS Observer (Society of Physics Students)
Radiations (Sigma Pi Sigma)

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Marsha Lester

Member Society Journals, published through AIP Publishing

Medical Physics – AAPM
American Journal of Physics – AAPT
The Physics Teacher – AAPT
Journal of the Acoustical Society of America – ASA
JVST A – AVS
JVST B – AVS
Surface Science Spectra – AVS
The Journal of Rheology – SOR