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Deepening Readers' Engagement with Your Content

6 ways to make your website stickier: A case study in site consumerization

Paul Guinnessy
Manager, Digital Assets
AIP / Physics Today

August 7, 2019

PHYSICS TODAY

AIP Publishing

Our mission

To be a unifying influence
for the diverse areas of physics
and the physics-related sciences through
high-quality, engaging, authoritative content,
and a forum for the exchange of ideas
within the community.

PHYSICS TODAY AIP Publishing

6 Six ways we use Literatum to make our website stickier

A case study in site consumerization

1. Multiple product types
2. Multiple content types
3. Targeted notifications of content updates
4. Content personalization
5. Enhanced onsite discovery
6. Responsive design

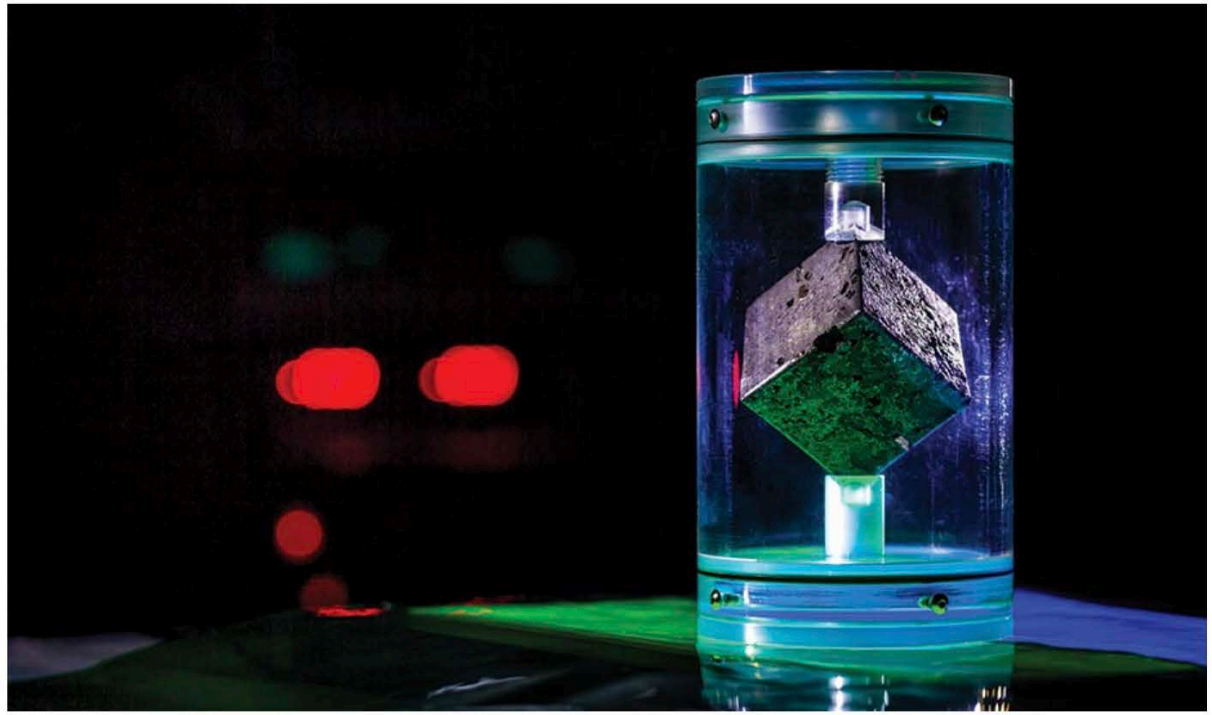
#1

Multiple product types on a single platform

- Magazines
- Journals
- Microsites
  for sponsored white papers and research papers

PHYSICS TODAY

Physics Today magazine



Tracking the journey of a uranium cube

Timothy Koeth and Miriam Hiebert

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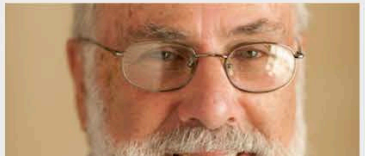

Today in History

Born on 9 May 1927, Manfred Eigen was a German physicist and Nobel laureate best known for his work measuring fast ionic reactions in solution. He earned his PhD in physics at the University of Göttingen in 1951. In

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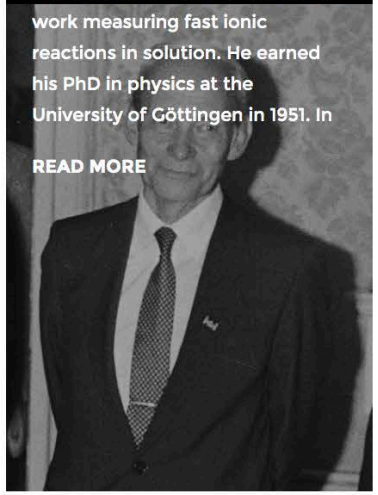

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- We’re a “browse,” not a “must read”
- No direction connection to most of our readers
- Competition from free content
- Content theft and repackaging
- Ads are a difficult sell

Featured

Robust propagation of pin-like optical beam through atmospheric turbulence

Ze Zhang, Xinli Liang, Mihalis Goutsoulas, Denghui Li, Xiuting Yang, Shupeng Yin, Jingjun Xu, Demetrios N. Christodoulides, Nikolaos K. Efremidis and Zhigang Chen

Ultrafast saturable absorption dynamics in hybrid graphene/Si_3N_4 waveguides
Pierre Demongodin, Houssein El Dirani, Jérémy Lhuillier, Romain Crochemore, Malik Kemiche, Thomas Wood, Ségolène Callard, Pedro Rojo-Romeo, Corrado Sciancalepore, Christian Grillet and Christelle Monat

Brillouin optomechanics in nanophotonic structures
Gustavo S. Wiederhecker, Paulo Dainese and Thiago P. Mayer Alegre

Pushing the limits of deep-ultraviolet scanning near-field optical microscopy
Ryota Ishii, Mitsuru Funato and Yoichi Kawakami

Toward large-scale fault-tolerant universal photonic quantum computing
S. Takeda and A. Furusawa

Editor's picks

MAY 07 2019

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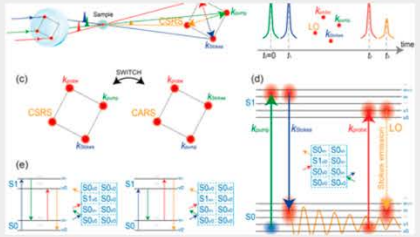
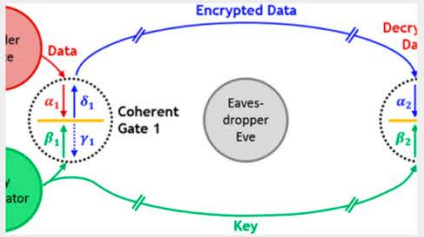
Pavel V. Kolesnichenko, Jonathan O. Tollerud and Jeffrey A. Davis



APR 24 2019

Cryptography in coherent optical information networks using dissipative metamaterial gates

Angelos Xomalis, Iosif Demirtzioglou, Yongmin Jung, Eric Plum, Cosimo Lacava, Periklis Petropoulos, David J. Richardson and Nikolay I. Zheludev



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Smart knee implant uses triboelectric energy

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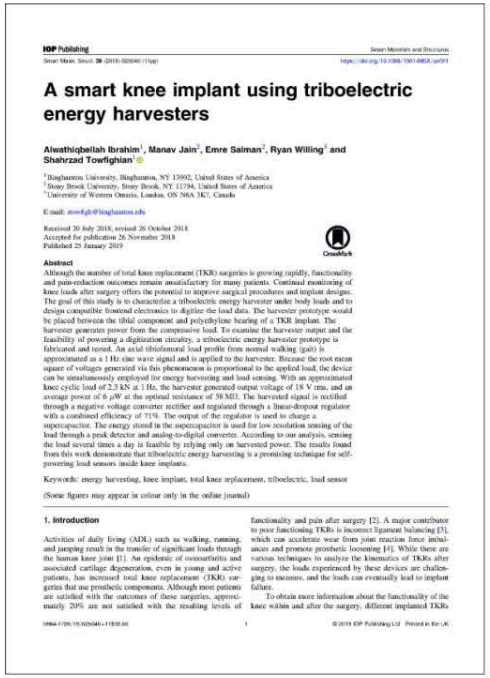
WHITEPAPERS

Smart knee implant uses triboelectric energy

Executive Summary

Although the number of total knee replacement surgeries is growing rapidly, functionality and pain-reduction outcomes remain unsatisfactory for many patients. Continual monitoring of knee loads after surgery offers the potential to improve surgical procedures and implant designs. The goal of this study is to characterize a ester under body patible frontend load data.



IOP Publishing

A smart knee implant using triboelectric energy harvesters

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Published 25 January 2019

Abstract

Although the number of total knee replacement (TKR) surgeries is growing rapidly, functionality and pain-reduction outcomes remain unsatisfactory for many patients. Continual monitoring of knee loads after surgery offers the potential to improve surgical procedures and implant designs. The goal of this study is to characterize a triboelectric energy harvester under body loads and to design compatible frontend electronics to digitize the load data. The harvester prototype would be placed between the tibial component and polyethylene bearing of a TKR implant. The harvester generates power from the compressive load. To examine the harvester output and the feasibility of powering a digitization circuitry, a triboelectric energy harvester prototype is fabricated and tested. An axial tibiofemoral load profile from normal walking (gait) is approximated as a 1 Hz sine wave signal and is applied to the harvester. Because the root mean square of voltages generated via this phenomenon is proportional to the applied load, the device can be simultaneously employed for energy harvesting and load sensing. With an approximated knee cyclic load of 2.3 kN at 1 Hz, the harvester generated output voltage of 18 V rms, and an average power of 6 μW at the optimal resistance of 58 MΩ. The harvested signal is rectified through a negative voltage converter rectifier and regulated through a linear-dropout regulator with a combined efficiency of 71%. The output of the regulator is used to charge a supercapacitor. The energy stored in the supercapacitor is used for low resolution sensing of the load through a peak detector and analog-to-digital converter. According to our analysis, sensing the load several times a day is feasible by relying only on harvested power. The results found from this work demonstrate that triboelectric energy harvesting is a promising technique for self-powering load sensors inside knee implants.

Keywords: energy harvesting, knee implant, total knee replacement, triboelectric, load sensor

(Some figures may appear in colour only in the online journal)

1. Introduction

Activities of daily living (ADL) such as walking, running, and jumping result in the transfer of significant loads through the human knee joint [1]. An epidemic of osteoarthritis and associated cartilage degeneration, even in young and active patients, has increased total knee replacement (TKR) surgeries that use prosthetic components. Although most patients are satisfied with the outcomes of these surgeries, approximately 20% are not satisfied with the resulting levels of functionality and pain after surgery [2]. A major contributor to poor functioning TKRs is incorrect ligament balancing [3], which can accelerate wear from joint reaction force imbalances and promote prosthetic loosening [4]. While there are various techniques to analyze the kinematics of TKRs after surgery, the loads experienced by these devices are challenging to measure, and the loads can eventually lead to implant failure.

To obtain more information about the functionality of the knee within and after the surgery, different implanted TKRs

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#2

Multiple content types

Attracts readers to scholarly content and deepens engagement once they're on site.

- News
- High-res imagery
- Video
- Interactive data sets
- Social media & commenting
- Editorial content (reviewed)
- Press releases

DOI:10.1063/PT.6.4.20180925a

25 Sep 2018 in People & History

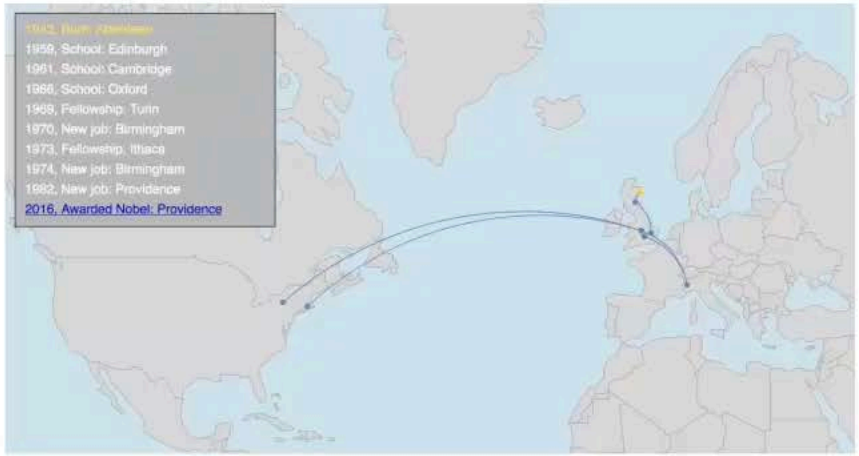
Nobel physicists on the move

An interactive map tracks the places where Nobel physics laureates lived and worked.

Greg Stasiewicz

Laureate to display: Michael Kosterlitz (2016) Replay

Sort laureates by: Surname Nobel Year



Henri Becquerel, who received a share of the 1903 Nobel Prize in Physics, spent his entire career in Paris, his birthplace. Masatoshi Koshiba, on the other hand, repeatedly crisscrossed oceans and continents before he earned his Nobel in 2002.

Science has steadily evolved into a global enterprise, and that's evident in examining the lifetime movements of the 206 recipients of the Nobel Prize in Physics. The interactive map charts the cities where each of the laureates through 2017 has lived and worked. You can browse the laureates' cartographic CVs either by name or by the year they received the prize.

The dates, locations, and reasons for relocations were collected primarily from laureate

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DOI:10.1063/PT.6.1.20180430b

30 Apr 2018 in Research & Technology

Uncovering ancient practices through acoustics

A unique survey of an ancient Greek sanctuary reveals that buildings and artifacts aren't necessary to capture the aural heritage of a historical site.

Pamela Jordan

0 COMMENTS 272 SHARES

View from Mount Lykaion of the surrounding Arcadian landscape, with geologist George H. Davis tracing the unusual bedrock formations. Credit: Pamela Jordan

When visiting a deteriorated building or ancient ruin, one may think the place is lifeless. But that is not the case when it comes to sound. Though the energy embedded in a sound dissipates soon after propagation, the conditions for creating that sound are not necessarily lost. Conceivably, a given sound could be experienced today much as it was in the distant

MOST READ

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Multiple product and content types

#1 & #2

Direct benefits

- Improved on- and off-site discovery
  - Cross-publication/integrated sitewide search
  - Searchable images, videos, and other Digital Objects
  - Improved SEO for both magazines and journals
- Cross-promotion of journal/magazine bundles

Multiple product and content types

#1 & #2

Direct benefits

- Increased quantity and quality of submissions
- Increased commenting
  5 – 10 comments/day vs. 1 – 2 previously
- Breaking down internal silos through authoring multi-dimensional, multi-purpose content
- Gives visitors a reason to return often
  Organic traffic: up ~23%

Targeted notifications of content updates

#3

Literatum's Admin Tool

- System-generated notifications to staff on content status
- Frees production staff for other projects
- Enables editors to handle content

Targeted notifications of content updates

#3

Literatum's Admin Tool

- System-generated notifications to staff on content status
- Frees production staff for other projects
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Literatum + marketing automation tools

- Email alerts
- Automated push notifications of new content links to partner society websites

#3

Targeted notifications of content updates

Direct benefits

- Increased site traffic
  - Drives traffic from partner society websites back to AIP
- Competes with other sites more successfully
  Renewal rate for individual subscriptions: up 20%
  New readership: up 68%
- Adds PR vehicles

Content personalization

#4

- Content recommendations
  - most read, most cited, and publishers' choice
- Curated content
  - via Page Builder recommendation widgets
- Social reading (integration with Disqus) and other means of reader interaction
- Content bundles
  - topic-based landing pages

#4

Content personalization

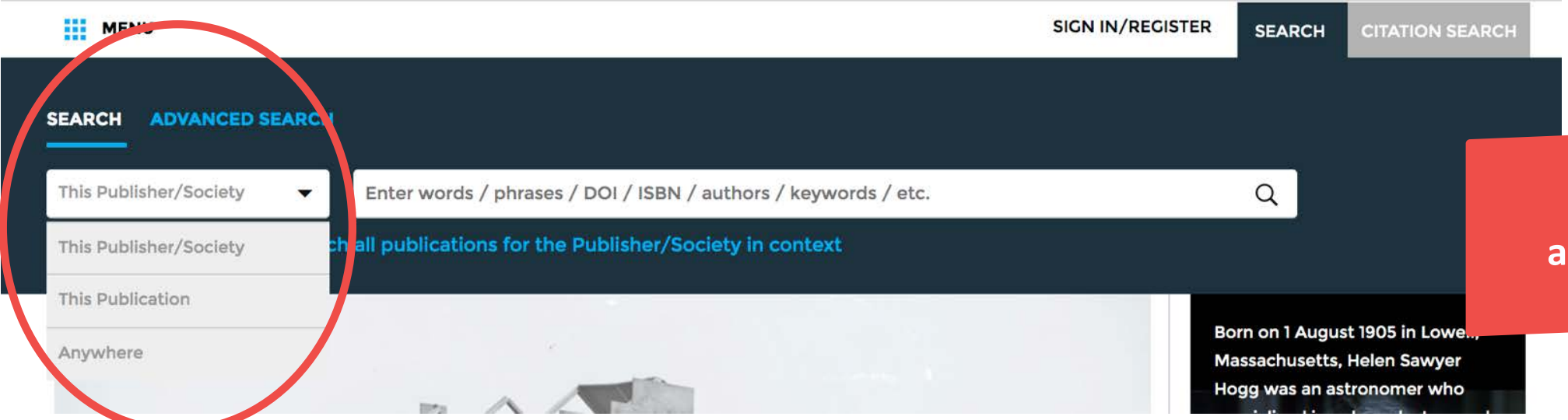
Direct benefits

- Strengthens engagement with readers
- Increased revenues / advertising value
  75% increase in ad revenue
- Page views: **up 52%**
- Increased traffic: **New readership up 68%**
- Higher click-through rates
- Lengthier site visits

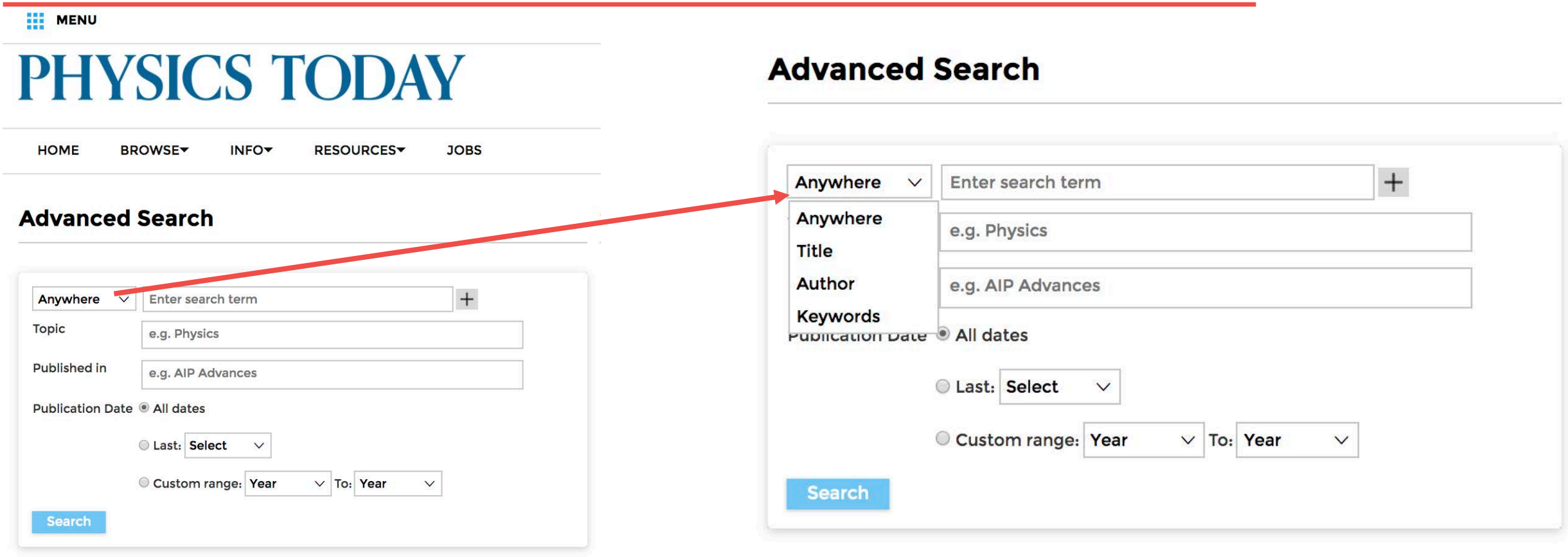
Enhanced onsite discovery mechanisms

#5

- Integrated search (across all content and publication types)
- Iterative search
- Saved searches
- Reader-controlled drill-down
- Search term suggestions
- Intuitive user-friendly navigation



Integrated and advanced search bars



Anywhere | laser physics

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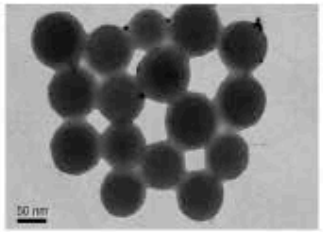


Nov 1, 2017

Liquid parameter free method for nanoparticle size determination based on dynamic light scattering

Chengfeng Yue, Peng Han, and Zhilie Tang

Journal of Laser Applications **29**(4), 042011 (2017); https://doi.org/10.2351/1.5008837

Jan 1, 2011 . 6 Citations

Teaching laser physics by experiments

Jes Henningsen

American Journal of Physics **79**(1), 85 (2011); https://doi.org/10.1119/1.3488984

Jul 1, 1975 . 59 Citations

Laser Physics

M. Sargent III, M. O. Scully, W. E. Lamb Jr., and Nicolaas Bloembergen

Physics Today **28**(7), 50 (1975); https://doi.org/10.1063/1.3069060

Nov 1, 1971 . 4 Citations

Laser Physics

A. Maitland, M. H. Dunn, and S. F. Jacobs

Physics Today **24**(11), 54 (1971); https://doi.org/10.1063/1.3022437

Apr 6, 2007

Numerical modelling for intense laser physics

Integrated search results

#5

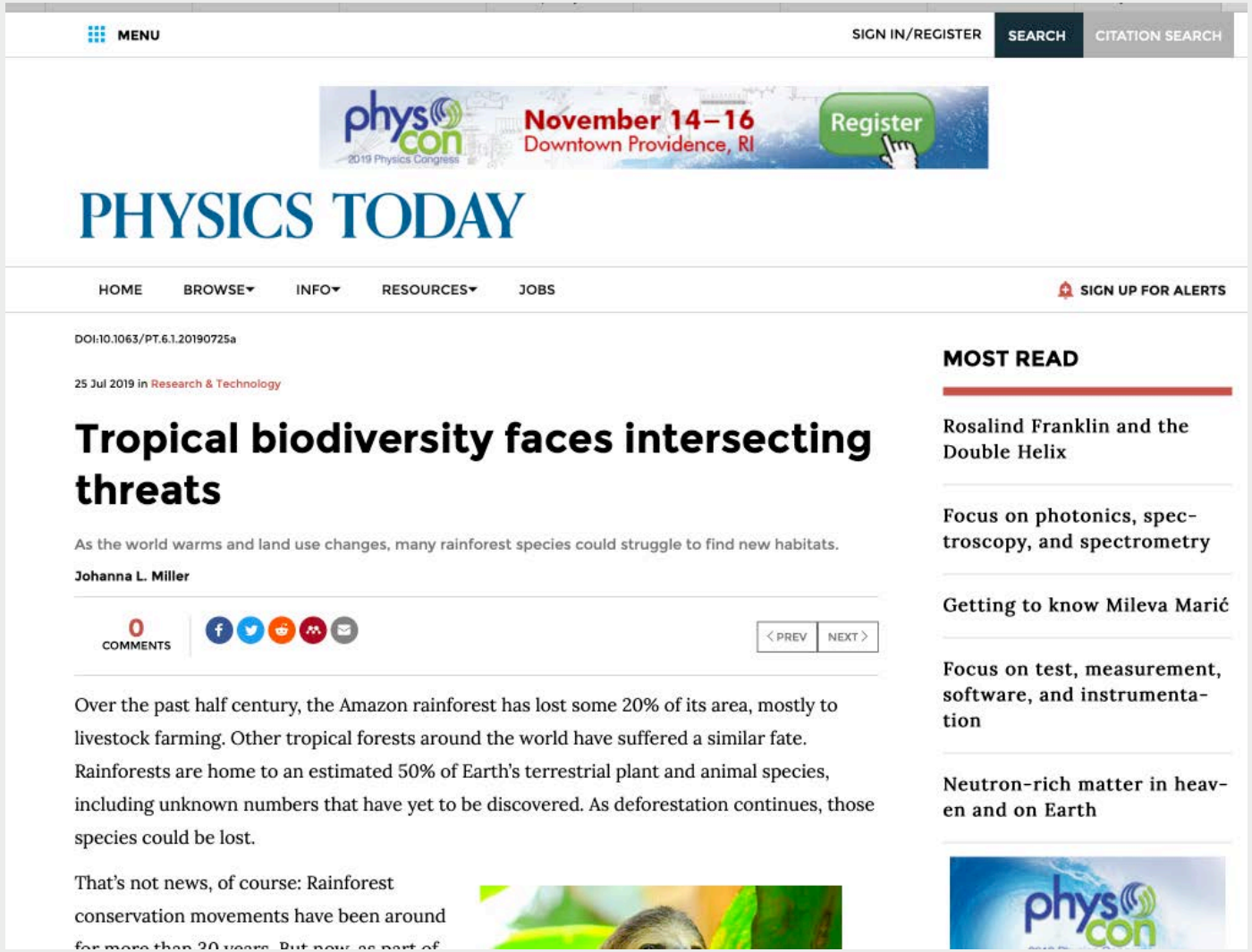
Enhanced onsite discovery mechanisms

Direct benefits

- More easily surfaced content
- Increased content visibility
- Increased brand visibility
- Product cross-promotion

#6 Responsive design

Cell phone and tablet views



Responsive design

#6

Direct benefits

- Appealing to the broadest possible audience
- Serving an audience traditionally underserved by scholarly content
  - Dramatically lower usage of scholarly sites on mobile
  - Scanning and selecting is not supported by most sites
- Making content more easily accessible = increased visibility.
  Mobile usage: Up 4–5 times

***Physics Today* has significantly more mobile users than the average journal.**

Results and takeaways

Results recap

Since moving to Literatum in January 2017

- Attracted new readers: **up 68%**
- Increased organic traffic: **up ~23%**
- Increased page views: **up 52%**
- Increased ad sales: **75% increase in ad revenue**
- Increased content engagement: **5 – 10 comments/day** *vs. 1 – 2 previously*
- Improved mobile usage: **4 – 5 times more**

Results recap (cont'd)

Since moving to Literatum in January 2017

- Increased renewal rate for individual subscriptions: **up 20%**
- Reduced bounce rate: **down 7%**
- A stronger design link between print and online
- Boosted brand visibility
- Created a valued destination website

Forged a stronger connection to our readers

Takeaways

- A brand should have the same strong visual presence no matter the channel or medium
- You have to find ways to attract and engage your readers
- If you’re on the web, make use of the web’s capabilities
- Literatum has features created specifically for these six tactics
- Freeing staff from rote production tasks makes time for exploring and implementing new tactics and technologies

Literatum features involved in making AIP sites stickier

1. Digital Objects (videos, interactives, short non-journal content)
2. Tags and taxonomies
3. Enhanced search technologies
4. Recommendation engine
5. Page Builder widgets
6. Easy integration with third-party systems
   (e.g., Javascript D3 libraries, WordPress, Disqus, mobile app)
7. Smart Groups (technology for segmenting site visitors into groups with similar characteristics or behaviors for target marketing)

LITERATUM

Deeping engagement
An ongoing process

- Moving to UX 3.0
- Additional focus groups
- Broader user testing
- UI improvements to increase interactive engagement
- Reassessing production print-to-digital workflow

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