



Academic Skills

Literature Search

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University of Groningen, the Netherlands

The Scientific Literature

The exponentially increasing number of published papers (2.5 million per year by one estimate) makes it more and more difficult for us to manage the flood of scientific information

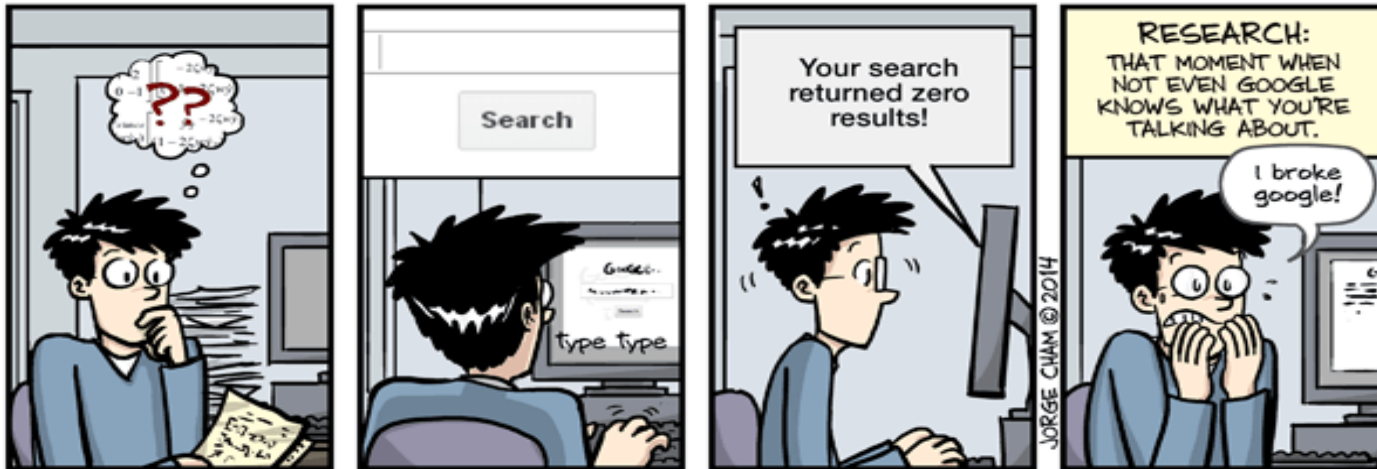
For young scientists in particular, there is the additional challenge of trying to **stay on top** of newly published literature **while still building up knowledge** of their research areas

Staying up to date with the literature is the **single most important skill** that remains crucial throughout a researcher's career.

Without knowing where the current gaps are, **your findings will either be old hat or too odd** to be cited right away.

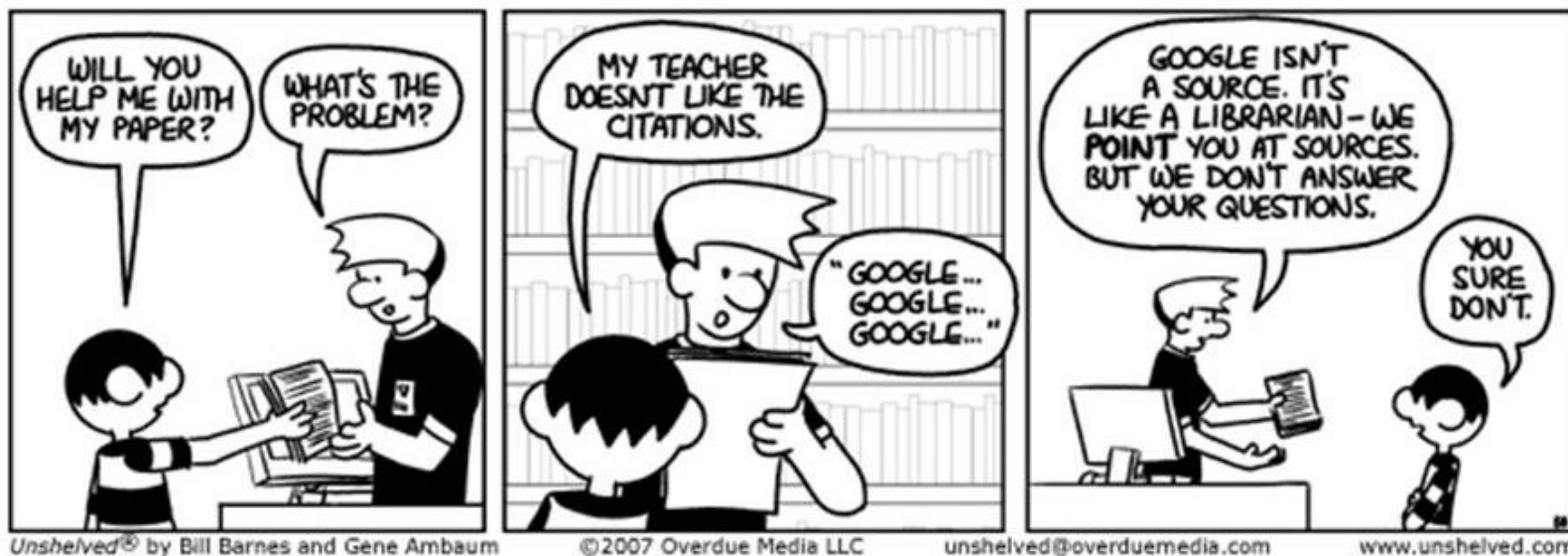
Benefits of Skills in Literature Search

- By synthesizing information from previous studies, you will be able to **provide a stronger background, justification and discussion** for your own study
- You will be able to **find gaps and weaknesses** of the existing research and thereby **come up with useful and meaningful research** questions
- Relevant studies yield **valuable insights and tips** to make your own study better
- It might **rescue you from embarrassing moments** during your talks



Challenges of Skills in Literature Search

- Reading papers can feel like **dead time**, because it is such a slow and absorbing process
- There are so **many papers out there** to digest
- Reading can also **feel disheartening**, as you will often find that other people have already published on what you thought was a really novel or original idea



Strategies of Good Literature Search

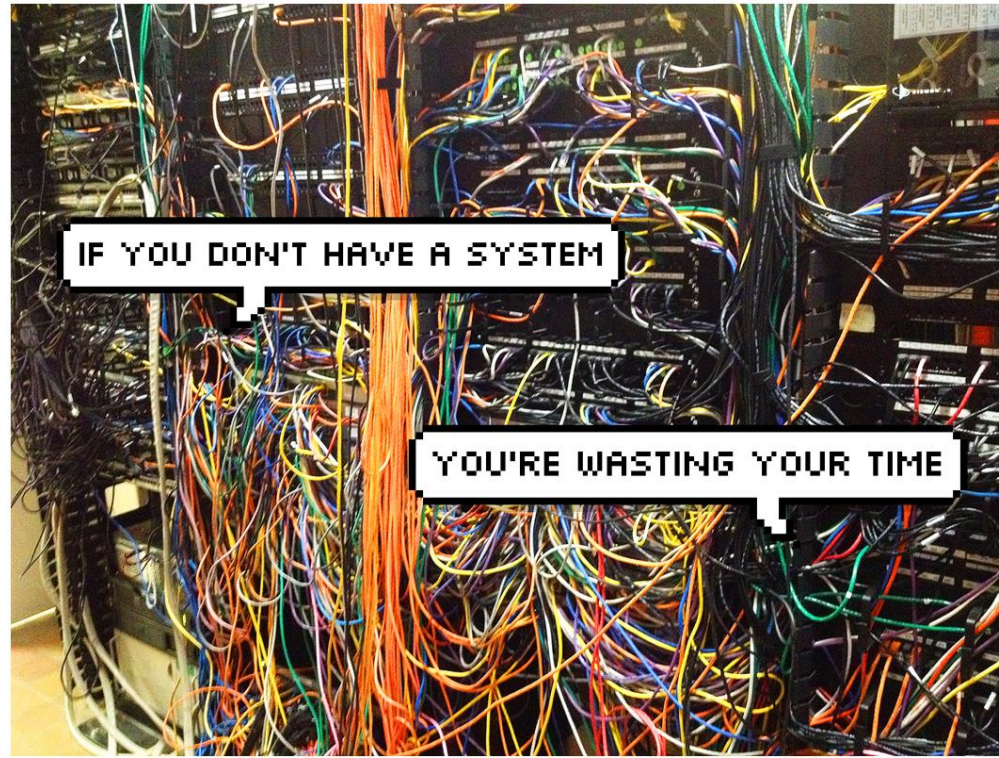
The university libraries maintain subscriptions to **thousands of journals**

To access their content, you simply need to visit the publisher's website from a university-linked IP address

Does it help?

NO.

Our goal here is to **develop general strategies** of literature search which are independent of a particular search engine



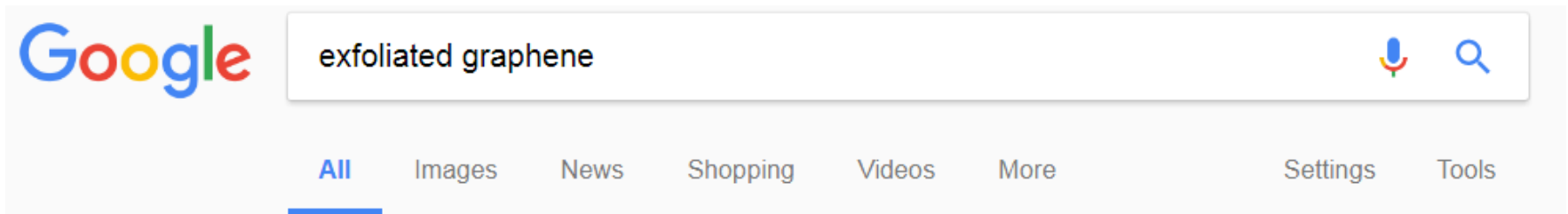
Keyword Searching

IS NOT USEFUL!

When you write a paper or design a project, YOU supply **keywords**

Let's try a keyword search for “graphene”

Do you think that will turn up work on “exfoliated graphene”?



About 393.000 results (0,26 seconds)

The **keyword mentality** is an **infectious** disease contracted from the modern Internet. It contributes to the wide-spread phenomenon of “forgotten papers”

DO NOT RELY ON IT!

Search Engines

A better method is to find a starting point – a paper, an author, a journal etc – and then work your way out from there

Bibliographic/general databases	Published databases and journal websites	Subject-specific databases
ISI Web of Knowledge Scifinder Google Scholar	APS, ACS, OCA, RSC Elsevier's ScienceDirect SpringerLink	Arxiv.org MathSciNet PhychINFO
Use to - Browse for popular and high quality articles - Start the discovery process and find an initial set of papers	Use to - Browse through journals that frequently publish your topic of interests - Browse through journals specific to your specialization	Used to - Look for articles in a specific discipline - Do in-depth research on a particular topic - Look for articles on obscure or niche topics

Web of Knowledge

The Web of Knowledge is maintained by Thompson Reuters and indexes just about **everything worth indexing**

The screenshot shows the top navigation bar with links for 'Web of Science', 'InCites', 'Journal Citation Reports', 'Essential Science Indicators', 'EndNote', 'Publons', 'Sign In', 'Help', and 'English'. Below this is the 'Web of Science' logo and the 'Clarivate Analytics' logo. A search bar is present with 'Search' text and buttons for 'My Tools', 'Search History', and 'Marked List'. A dropdown menu for 'Select a database' is set to 'All Databases', with a 'Learn More' link. A promotional banner for 'Join the Publons community of reviewers for Peer Review Week' is visible. The search options are 'Basic Search' (selected), 'Cited Reference Search', and 'Advanced Search'. The search input field contains the example text 'Example: oil spill* mediterranean' and a 'Topic' dropdown. A blue 'Search' button is to the right. Below the search bar are links for '+ Add Another Field' and 'Reset Form'. A tip link 'Click here for tips to improve your search.' is also present. The URL 'http://webofknowledge.com' is displayed at the bottom right of the interface.

However, sometimes it is difficult to narrow the results down to a manageable level

Web of Knowledge

Web of Science | InCites | Journal Citation Reports | Essential Science Indicators | EndNote | Publons

Sign In | Help | English

Web of Science

Clarivate
Analytics

Search

My Tools | Search History | Marked List

Select a database

All Databases

[Learn More](#)



Join the Publons community of reviewers for Peer Review Week

Basic Search

Cited Reference Search

Advanced Search

Example: oil spill* mediterranean



Topic

Search

[Click here for tips to improve your search.](#)

[+ Add Another Field](#) | [Reset Form](#)

An easy way to narrow your search to scientific journals

TIMESPAN

All years

From 1900 to 2017

[▶ MORE SETTINGS](#)

Web of Knowledge

Basic Search Cited Reference Search Advanced Search

Pshenichnikov, M*

Author

Search

+ Add Another Field | Reset Form | Select from Index

TIMESPAN

All years

From 1900 to 2017

MORE SETTINGS

Auto-suggest publication names
On

Search language to use
Auto select

Default Number of Search Fields to Display
1 field (Topic)

(To save these permanently, sign in or register)

Different journals index author names differently
Wildcards (*) ensure that you get all results back

Time/database limits are often more useful than keyword/topic searches

Web of Knowledge: Backward Search

To get a feeling for how “important” a paper is, you can sort by citations instead of date

Results: 96
(from All Databases)

You searched for: AUTHOR: (Pshenichnikov, M*) ...More

Refine Results

Search within results for...

Filter results by:

- Highly Cited in Field (2)

Publication Years

- 2017 (7)
- 2016 (7)
- 2009 (6)
- 1998 (6)
- 2007 (5)

more options / values...

Sort by: Publication Date -- newest to oldest

- Publication Date -- newest to oldest
- Publication Date -- oldest to newest
- Recently Added
- Times Cited -- highest to lowest
- Times Cited -- lowest to highest
- Usage Count -- Last 180 days
- Usage Count -- Since 2013
- Relevance

Page 1 of 10

to EndNote online Add to Marked List

cs in diluted alcohols

Shinokita, Keisuke; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 19 Issue: 41 Pages: 27960-27967 Published: NOV 7 2017

ilic Molecular Nanostructures via Halogen Exchange

By: Kriete, Bjorn; Bondarenko, Anna S.; Jumde, Varsha R.; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 13 Pages: 2895-2901 Published: JUL 6 2017

Get it! **View Abstract**

Interplay between Hydrogen Bonding and Vibrational Coupling in Liquid N-Methylacetamide

By: Cunha, Ana V.; Salamatova, Evgeniia; Bloem, Robbert; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 11 Pages: 2438-2444 Published: JUN 1 2017

Get it! **View Abstract**

Luminescent Organic Semiconducting Langmuir Monolayers

By: Agina, Elena V.; Mannanov, Artur A.; Sizov, Alexey S.; et al.

Times Cited: 0
(from All Databases)

Usage Count

Times Cited: 1
(from All Databases)

Usage Count

Times Cited: 2
(from All Databases)

Usage Count

Times Cited: 0
(from All Databases)

Web of Knowledge: Forward Search

Sort by: Times Cited -- highest to lowest

Page 1 of 10

Select Page |   5K | Save to EndNote online | Add to Marked List |  Create Citation Report |  Analyze Results

1. **The Role of Driving Energy and Delocalized States for Charge Separation in Organic Semiconductors**
By: Bakulin, Artem A.; Rao, Akshay; Pavelyev, Vlad G.; et al.
SCIENCE Volume: 335 Issue: 6074 Pages: 1340-1344 Published: MAR 16 2012

Times Cited: 559
(from All Databases)
 **Highly Cited Paper**
Usage Count 

One of the best features of WoS
is the “times cited” search

Press it!

Web of Knowledge: Forward Search

Citing Articles: 528

(from All Databases)

For: The Role of Driving Energy and Delocalized States for Charge Separation in Organic Semiconductors
...More

Times Cited Counts

559 in All Databases

558 in Web of Science Core Collection

69 in BIOSIS Citation Index

3 in Chinese Science Citation Database

0 data sets in Data Citation Index

0 publication in Data Citation Index

0 in Russian Science Citation Index

0 in ScIELO Citation Index

[View Additional Times Cited Counts](#)

Sort by: Times Cited -- highest to lowest

Page 1 of 53

Select Page



Save to EndNote online

Add to Marked List

[Create Citation Report](#)

[Analyze Results](#)

Times Cited: 456

(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 449

(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 412

(from All Databases)

Hot Paper

Highly Cited Paper

Usage Count

Times Cited: 330

(from All Databases)

Highly Cited Paper

1. **Polymer solar cells with enhanced fill factors**

By: Guo, Xugang; Zhou, Nanjia; Lou, Sylvia J.; et al.
NATURE PHOTONICS Volume: 7 Issue: 10 Pages: 825-833 Published: OCT 2013

[View Abstract](#)

2. **Spatial separation of photogenerated electrons and holes among {010} and {110} crystal facets of BiVO4**

By: Li, Rengui; Zhang, Fuxiang; Wang, Donge; et al.
NATURE COMMUNICATIONS Volume: 4 Article Number: 1432 Published: FEB 2013

[View Abstract](#)

Free Polymer Solar Cells with over 11% Efficiency and Excellent Thermal Stability

enchao; Qian, Deping; Zhang, Shaoqing; et al.
MATERIALS Volume: 28 Issue: 23 Pages: 4734-4739 Published: JUN 15 2016

[View Abstract](#)

4. **Ultrafast Long-Range Charge Separation in Organic Semiconductor Photovoltaic Diodes**

By: Gelinas, Simon; Rao, Akshay; Kumar, Abhishek; et al.
SCIENCE Volume: 343 Issue: 6170 Pages: 512-516 Published: JAN 31 2014

[View Abstract](#)

Filter results by:

Highly Cited in Field (37)

Hot Papers in Field (2)

[Refine](#)

Sort by times cited and voila, relevant review articles for a topic, starting from a paper

Web of Knowledge: Metrics

Publication statistics on the author

The screenshot displays a search results page with the following elements:

- Results: 96** (from All Databases)
- You searched for:** AUTHOR: (Pshenichnikov, M*) ...More
- Refine Results** section with a search box and filter options.
- Sort by:** Publication Date -- newest to oldest (selected)
- Page 1 of 10**
- Actions:** Add to EndNote online, Add to Marked List, Create Citation Report, Analyze Results.
- Article 1:** **...cs in diluted alcohols**
Shinokita, Keisuke; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 19 Issue: 41 Pages: 27960-27967 Published: NOV 7 2017
Metrics: Times Cited: 0, Usage Count.
- Article 2:** **...ilic Molecular Nanostructures via Halogen Exchange**
By: Kriete, Bjorn; Bondarenko, Anna S.; Jumde, Varsha R.; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 13 Pages: 2895-2901 Published: JUL 6 2017
Metrics: Times Cited: 1, Usage Count.
- Article 3:** **Interplay between Hydrogen Bonding and Vibrational Coupling in Liquid N-Methylacetamide**
By: Cunha, Ana V.; Salamatova, Evgeniia; Bloem, Robbert; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 11 Pages: 2438-2444 Published: JUN 1 2017
Metrics: Times Cited: 2, Usage Count.
- Article 4:** **Luminescent Organic Semiconducting Langmuir Monolayers**
By: Agina, Elena V.; Mannanov, Artur A.; Sizov, Alexey S.; et al.
Published: MAY 04 2017
Metrics: Times Cited: 0, Usage Count.

Web of Knowledge: Metrics

Total Publications

96



h-index

37

Average citations per item

47.67

Sum of Times Cited

4,576

Without self citations

4,311

Citing articles

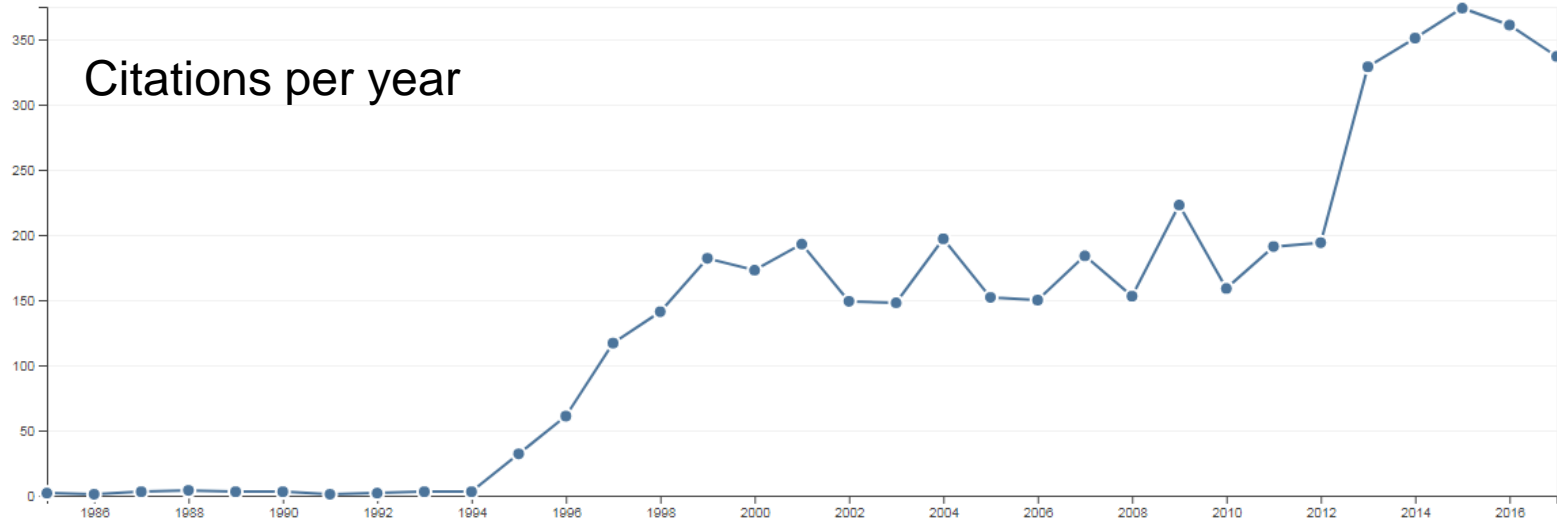
3,459

Without self citations

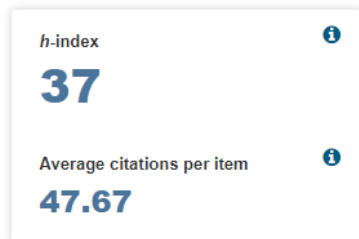
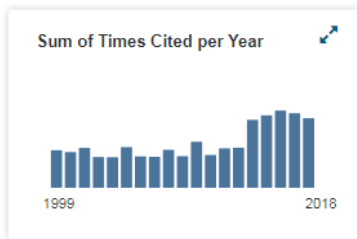
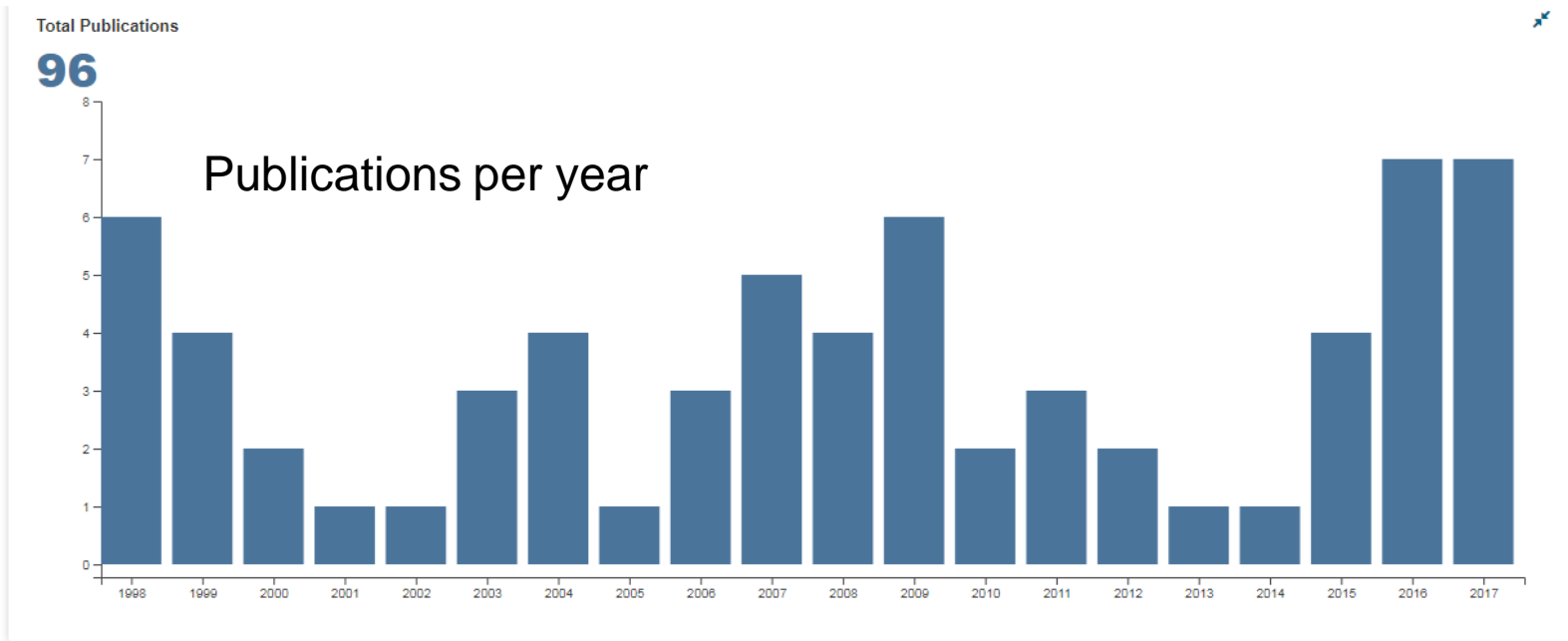
3,388

Sum of Times Cited per Year

Citations per year



Web of Knowledge: Metrics



Web of Knowledge: Metrics

Analysis of the results

Results: 96
(from All Databases)

You searched for: AUTHOR: (Pshenichnikov, M*) ...More

Refine Results

Search within results for...

Filter results by:

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Refine

Publication Years

- 2017 (7)
- 2016 (7)
- 2009 (6)
- 1998 (6)
- 2007 (5)

more options / values... **Refine**

Sort by: Publication Date -- newest to oldest

- Publication Date -- newest to oldest**
- Publication Date -- oldest to newest
- Recently Added
- Times Cited -- highest to lowest
- Times Cited -- lowest to highest
- Usage Count -- Last 180 days
- Usage Count -- Since 2013
- Relevance

Page 1 of 10

to EndNote online **Add to Marked List**

Create Citation Report
Analyze Results

Times Cited: 0
(from All Databases)

Usage Count ▾

Times Cited: 1
(from All Databases)

Usage Count ▾

Times Cited: 2
(from All Databases)

Usage Count ▾

Times Cited: 0
(from All Databases)

Usage Count ▾

1. **...cs in diluted alcohols**
Shinokita, Keisuke; et al.
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JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 13 Pages: 2895-2901 Published: JUL 6 2017
Get it! **View Abstract**

3. **Interplay between Hydrogen Bonding and Vibrational Coupling in Liquid N-Methylacetamide**
By: Cunha, Ana V.; Salamatova, Evgeniia; Bloem, Robbert; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 8 Issue: 11 Pages: 2438-2444 Published: JUN 1 2017
Get it! **View Abstract**

4. **Luminescent Organic Semiconducting Langmuir Monolayers**
By: Agina, Elena V.; Mannanov, Artur A.; Sizov, Alexey S.; et al.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 19 Issue: 10 Pages: 10070-10080 Published: MAY 04 2017

Web of Knowledge: Metrics

Rank the records by this field:	Set display options:	Sort by:
<ul style="list-style-type: none">AuthorsAuthors - ChineseCountries/TerritoriesCountries/Territories - Chinese	Show the top <input type="text" value="25"/> Results. Minimum record count (threshold): <input type="text" value="2"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Co-authors

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

<input checked="" type="checkbox"/> View Records <input checked="" type="checkbox"/> Exclude Records	Field: Authors	Record Count	% of 96	Bar Chart	Save Analysis Data to File <input checked="" type="radio"/> Data rows displayed in table <input type="radio"/> All data rows (up to 200,000)
<input type="checkbox"/>	PSHENICHNIKOV MS	91	94.792 %		
<input type="checkbox"/>	PSHENICHNIKOV M S	56	58.333 %		
<input type="checkbox"/>	WIERSMA DA	41	42.708 %		
<input type="checkbox"/>	WIERSMA D A	35	36.458 %		
<input type="checkbox"/>	PSHENICHNIKOV MAXIM S	25	26.042 %		
<input type="checkbox"/>	BALTUSKA A	17	17.708 %		
<input type="checkbox"/>	KRASNIKOV VV	16	16.667 %		

Web of Knowledge: Metrics

Rank the records by this field:	Set display options:	Sort by:
<input type="checkbox"/> Institutions - Chinese <input type="checkbox"/> Languages <input type="checkbox"/> Publication Years <input checked="" type="checkbox"/> Research Areas	Show the top <input type="text" value="25"/> Results. Minimum record count (threshold): <input type="text" value="2"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Research areas

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

<input checked="" type="checkbox"/> View Records <input checked="" type="checkbox"/> Exclude Records	Field: Research Areas	Record Count	% of 96	Bar Chart	Save Analysis Data to File <input checked="" type="radio"/> Data rows displayed in table <input type="radio"/> All data rows (up to 200,000)
<input type="checkbox"/>	PHYSICS	76	79.167 %		
<input type="checkbox"/>	CHEMISTRY	50	52.083 %		
<input type="checkbox"/>	OPTICS	36	37.500 %		
<input type="checkbox"/>	SPECTROSCOPY	34	35.417 %		
<input type="checkbox"/>	MATERIALS SCIENCE	24	25.000 %		
<input type="checkbox"/>	ENGINEERING	17	17.708 %		
<input type="checkbox"/>	SCIENCE TECHNOLOGY OTHER TOPICS	15	15.625 %		
<input type="checkbox"/>	MATHEMATICS	9	9.375 %		

Web of Knowledge: Metrics

Rank the records by this field:	Set display options:	Sort by:
<ul style="list-style-type: none">General CategoriesGroup/Corporate AuthorsInstitutionsInstitutions - ChineseLanguages	Show the top <input type="text" value="25"/> Results. Minimum record count (threshold): <input type="text" value="2"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Languages

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

<input checked="" type="checkbox"/> View Records <input checked="" type="checkbox"/> Exclude Records	Field: Languages	Record Count	% of 96	Bar Chart	Save Analysis Data to File <input checked="" type="radio"/> Data rows displayed in table <input type="radio"/> All data rows (up to 200,000)
<input type="checkbox"/>	ENGLISH	81	84.375 %		
<input type="checkbox"/>	RUSSIAN	15	15.625 %		
<input checked="" type="checkbox"/> View Records <input checked="" type="checkbox"/> Exclude Records	Field: Languages	Record Count	% of 96	Bar Chart	Save Analysis Data to File <input type="radio"/> Data rows displayed in table <input type="radio"/> All data rows (up to 200,000)

The “Web” of Science

Think of WoS searches as a “web” of papers connected by citations and authors

Start: a known quantity, such as a specific paper or author

Next: follow the web to get a feeling for how it fits into the literature

This type of searching is critical for grant proposals and similar “background” searches.

You know you are doing a good job if your search results make you depressed because everything has already been thought of and tried

Scifinder

Most fields of materials science use **chemical compounds** in some context
Searching by names, particularly in the non-chemistry literature is **inefficient**
Scifinder is good for **structure-based searching**, finding reactions for specific transformations, and gauging how difficult and/or common the synthesis of something is



SciFinder®
The choice for chemistry research.™

Your session is no longer valid. Sign in again to SciFinder.

Sign In

Username

Password

Remember me for two weeks unless I sign out
(Do not use on a shared computer)

Sign In

[Forgot Username or Password?](#)

Your SciFinder username and password are assigned to you alone and may not be shared with anyone else.

News & Updates

Welcome to SciFinder

Watch Part 2 of Our New Science in the News Podcast on Molecular Gastronomy

Part 2 of our Science in the News podcast on molecular gastronomy features a pioneer in the field, RO Cooper, chef and owner of Rogue 24 in Washington, DC. Watch it now and stay tuned for more Science in the News podcasts coming soon!

Join CAS at the ACS National Meeting & Exposition in Indianapolis

Join us at the 246th ACS National Meeting & Exposition in Indianapolis to see how CAS and SciFinder can help you learn more about the science that is transforming the transportation industry. See what we have planned.

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Sign up today to participate in a variety of user research activities, ranging from short surveys to 1-hour Web-based discussions.

The Inventory of Reaction Chemical

<https://scifinder.cas.org/scifinder/login>


Free Online Search Engines

Academic Search Engine	URL	Disciplines	Help Files
Google Scholar	scholar.google.com (http://scholar.google.com)	All	scholar.google.com/intl/en/scholar/help.html (http://scholar.google.com/intl/en/scholar/help.html)
ScienceDirect	http://www.sciencedirect.com/science/search (http://www.sciencedirect.com/science/search)	All	NA
Pubmed	www.ncbi.nlm.nih.gov/pubmed (http://www.ncbi.nlm.nih.gov/pubmed/)	Life sciences	www.nlm.nih.gov/bsd/disted/pubmedtutorial (http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/)
IEEE Xplore	ieeexplore.ieee.org/Xplore/guesthome.jsp (http://ieeexplore.ieee.org/Xplore/guesthome.jsp)	Electronics, Electrical engineering, Computer science	NA
Education Resources Information Center (ERIC)	eric.ed.gov (http://eric.ed.gov/)	Education	NA

Google Scholar



<http://scholar.google.com/>

Articles Case law

Recommended articles

Highly soluble and thermally stable alkyl-free star-shaped D- π -A oligomer with electron-withdrawing phenyldicyanovinyl groups for organic photovoltaics

YN Luponosov, AN Solodukhin, AL Mannanov... - Organic Electronics, 2017

Plastic Solar Cells: Where the Current Begins

O Kozlov

[See all recommendations](#)

Stand on the shoulders of giants

[Go to Google Scholar](#)

Google Scholar is good for searching while **off campus**, but it returns a lot of **irrelevant results**

It is less restrictive than WoS

Citation Alerts

Google Scholar

Alerts

Alert query: "pshenichnikov, ms"

Email: m.s.pchenitchnikov@rug.nl

Number of results: Show up to 10 results

Update results

CREATE ALERT

You can get alerts when your own papers are cited, or when a specific author publishes a paper

Typically you can keep track of your specific field with fewer than a dozen author alerts

Sample results since 2017:

[\[HTML\] Interplay Between Hydrogen Bonding and Vibrational Coupling in Liquid N-Methylacetamide](#)

AM Cunha, E Salamatova, R Bloem, SJ Roeters... - The Journal of Physical ..., 2017

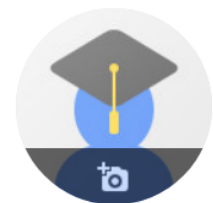
Intrinsically disordered proteins play an important role in biology, and unraveling their labile structure presents a vital challenge. However, the dynamical structure of such proteins thwarts their study by standard techniques such as x-ray diffraction and NMR spectroscopy.

[Hydrogen bond and lifetime dynamics in diluted alcohols](#)

E Salamatova, AV Cunha, K Shinokita, TLC Jansen... - ... Chemistry Chemical Physics, 2017

Hydrogen-bonding plays a crucial role in many chemical and biochemical reactions. Alcohols, with their hydrophilic and hydrophobic groups, constitute an important class of

Google Scholar Metrics



Maxim S. Pshenichnikov

[University of Groningen](#)

Verified email at rug.nl

[ultrafast spectroscopy](#) [excitons](#) [coherence](#) [photovoltaics](#) [2D spectroscopy](#)

FOLLOW

TITLE

CITED BY

YEAR

[The role of driving energy and delocalized states for charge separation in organic semiconductors](#)

AA Bakulin, A Rao, VG Pavelyev, PHM van Loosdrecht, ...
Science 335 (6074), 1340-1344

655 2012

[Optical pulse compression to 5 fs at a 1-MHz repetition rate](#)

A Baltuška, Z Wei, MS Pshenichnikov, DA Wiersma
Optics letters 22 (2), 102-104

411 1997

[Broadband dye-sensitized upconversion of near-infrared light](#)

W Zou, C Visser, JA Maduro, MS Pshenichnikov, JC Hummelen
Nature Photonics 6 (8), 560-564

409 2012

[Ultrafast solvation dynamics explored by femtosecond photon echo spectroscopies](#)

WP de Boeij, MS Pshenichnikov, DA Wiersma
Annual review of physical chemistry 49 (1), 99-123

295 1998

[Autocorrelation measurement of 6-fs pulses based on the two-photon-induced photocurrent in a GaAsP photodiode](#)

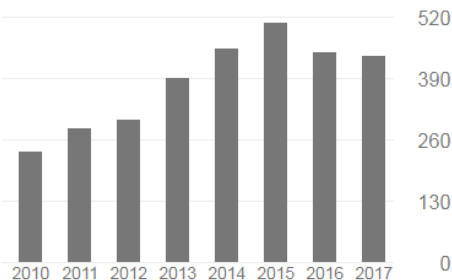
JK Ranka, AL Gaeta, A Baltuska, MS Pshenichnikov, DA Wiersma
Optics letters 22 (17), 1344-1346

282 1997

Cited by

[VIEW ALL](#)

	All	Since 2012
Citations	6165	2549
h-index	38	25
i10-index	61	42



Co-authors

[EDIT](#)

No co-authors

Google Scholar Metrics



Maxim S. Pshenichnikov

[University of Groningen](#)

Verified email at rug.nl

[ultrafast spectroscopy](#) [excitons](#) [coherence](#) [photovoltaics](#) [2D spectroscopy](#)



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New citations to my articles

Recommended articles

Email address for updates

TITLE

[The role of driving energy and delocalized states in semiconductors](#)

AA Bakulin, A Rao, VG Pavelyev, PHM van Loosdrecht, Science 335 (6074), 1340-1344

[Optical pulse compression to 5 fs at a 1-MHz repetition rate](#)

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[Ultrafast solvation dynamics explored by femtosecond photon echo spectroscopies](#)

WP de Boeij, MS Pshenichnikov, DA Wiersma Annual review of physical chemistry 49 (1), 99-123

295 1998

[Autocorrelation measurement of 6-fs pulses based on the two-photon-induced photocurrent in a GaAsP photodiode](#)

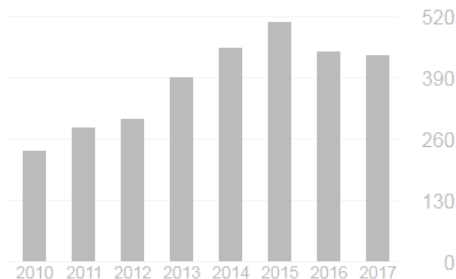
JK Ranka, AL Gaeta, A Baltuska, MS Pshenichnikov, DA Wiersma Optics letters 22 (17), 1344-1346

282 1997

Cited by

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	All	Since 2012
Citations	6165	2549
h-index	38	25
i10-index	61	42



Co-authors

[EDIT](#)

No co-authors

Publishers' Websites

Publishers often offer nice search features right on their own websites

Societies generally do it better than for-profit journals, however

pubs.acs.org

pubs.rsc.org

journals.aip.org

www.aps.org/publications/journals

onlinelibrary.wiley.com

sciencedirect.com

www.aaas.org/publications

www.nature.com/siteindex



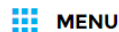
Publishers' Websites

Publishers often offer nice search features right on their own websites. Societies generally do it better than for-profit journals, however.



Search Citation Subject **Advanced Search**

J. Am. Chem. Soc. vol page Citation Search



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Journal Articles / Books Chapters

Alerts

Publishers also offer alert services

These are mostly useful for following specific topics in specific journals



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ASAPSM Alerts

Daily or weekly email alerts when individual articles (Articles ASAPSM) from the journal(s) you have selected are released on the web.

Table of Contents (TOC) Alerts

Email alerts with the Table of Contents for specific issues on the day the complete issue is posted to the web.

Social-Literature-Search

Community-based, social sites like **Research Gate, LinkedIn, Facebook** are becoming **increasingly popular**



But they all suffer from the same **generational problem**: science is driven by mid-to-late career scientists, essentially **none of whom use social media**

If you want to interact with other students and junior researchers, then these are great
But **do not rely on them** for anything else !

Advance your research

Discover scientific knowledge, and make your research visible.

Join for free

 Connect with LinkedIn  Connect with Facebook

Open Access

Everyone likes the idea of **open access scientific journals**

There are some top-tier, free, open access journals

Journals > physics > open access

Open Physics

Atmospheric Chemistry and Physics

Progress in Physics

Living Reviews in Relativity

European Physical Journal

Journal of Physics: Conference Series

Electronic Journal of Theoretical Ph...

Living Reviews in Solar Ph

Physical Review X

Research Letters in Physics

Journal of Cosmology and Astropart...

Physics in Medicine and B

Journal of High Energy Physics

Advances in Theoretical and Mathe...

Astrophysics and Space Science

Journal of Optics

On the other hand, the **proliferation** of journals is **out of control**. The push for open access has created an entire **new industry of for-profit publishers** whose “peer review” system is a mere technicality. You do need to be extra careful when citing “grey” literature in your paper.

Get to know your field!

Metrics

Metrics like **impact factors** are not useful because it is not clear what they measure

The **impact factor (IF)** is the **number of citations**, received in that year, of articles published in that journal during the two preceding years, divided by the total number of articles published in that journal during the two preceding years

The only metric that matters is **readership**

Speciality journals often contain **the most rigorous science** in a field, but will have a **low impact factor** because of the narrowness of the topic

Conversely, broad-topic journals (Nature, Science etc.) tend to publish condensed versions of major claims that are better described in follow-up publications in topical journals

Learn what journals are read in your field

Impact Factors: Physics

Rank	Journals Title	2017	2016
1	<u>NATURE Photonics</u>	37,852	31,167
2	<u>Reviews Of Modern Physics</u>	36,917	33,177
3	<u>Annual Review Of Astronomy And Astrophysics</u>	30,733	37,846
4	<u>Energy & Environmental Science</u>	29,518	25,427
5	<u>Living Reviews In Relativity</u>	29,300	32,000
6	<u>NATURE Physics</u>	22,806	18,791
7	<u>Advances In Physics</u>	21,818	18,000
8	<u>Annual Review Of Condensed Matter Physics</u>	18,588	16,379
9	<u>Advances In Optics And Photonics</u>	17,833	12,368
10	<u>Nano Today</u>	17,476	13,157
11	<u>Physics Reports: Review Section Of Physics Letters</u>	17,425	
12	<u>Progress In Energy And Combustion Science</u>	17,382	16,784
13	<u>Advanced Energy Materials</u>	16,721	15,230
14	<u>Reports On Progress In Physics</u>	14,311	12,933
15	<u>Light: Science & Applications</u>	14,098	13,600
16	<u>Annual Review Of Fluid Mechanics</u>	14,020	12,333

Impact Factors: Physics

Rank	Journals Title	2017	2016
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2	<u>Reviews Of Modern Physics</u>	36,917	33,177
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5	<u>Living Reviews In Relativity</u>	29,300	32,000
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7	<u>Advances In Physics</u>	21,818	18,000
8	<u>Annual Review Of Condensed Matter Physics</u>	18,588	16,379

Medicine 2017 - Impact Factor Ranking

Rank	Journals Title	2017	2016
1	<u>New England Journal Of Medicine</u>	72,406	59,558
2	<u>Lancet</u>	47,831	44,002
3	<u>JAMA: Journal Of The American Medical Association</u>	44,405	
4	<u>NATURE Medicine</u>	29,886	30,357

Impact Factors

Who likes impact factors?

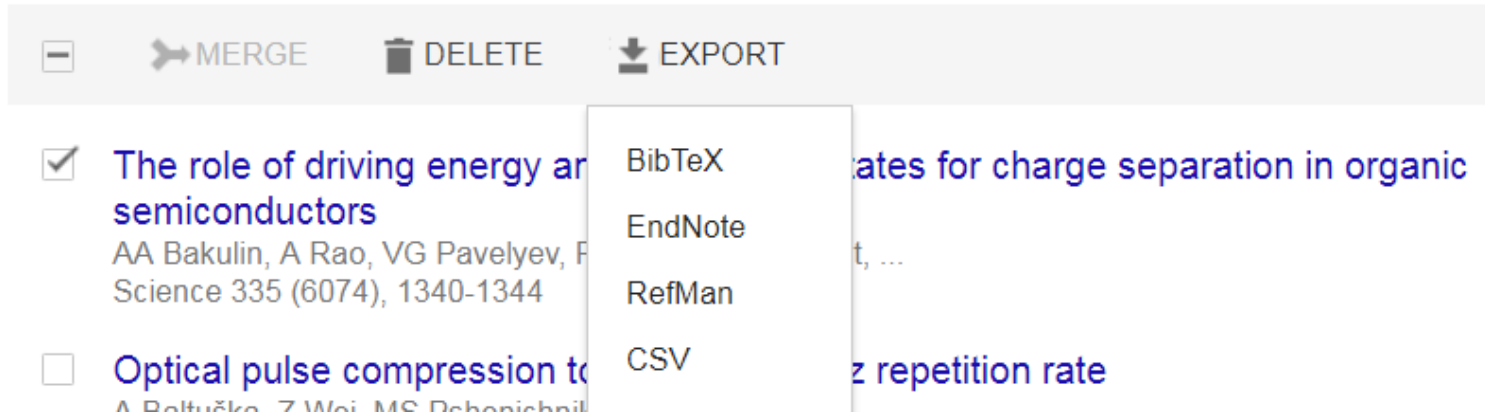
Editors hate impact factors. Consider a small, specialized journal that publishes monthly versus a letter/communication journal that publishes bimonthly or an accounts/review journal that publishes quarterly. They will have widely different impact factors based only on how they are structured and having nothing to do with the quality of the content.

Scientists hate impact factors. We want to publish in respectable journals that are read by our peers, not journals that some algorithm deem important

Funding agencies likes impact factors. In the modern era of “accountability” funding agencies need metrics to justify diverting taxpayer money to endeavors that are published in paywalled journals and that lead to patents owned by universities

Get to know your field!

Reference Management Software



Pick one, any one, it doesn't make a difference. But develop good habits!

Use tags! A few tags reminding you of why you were interested in a particular paper can be a lifesaver months or years later.

Don't Be Afraid to delete! Don't hoard papers — if, once you take the time to read a paper, you realize it is useless, delete it. You won't miss it

Use Groups/Folders! As soon as you have a target—a manuscript, a thesis chapter, a grant proposal, etc.—create a folder and start populating it

Practice

Unless you are digging in a familiar field, your first challenge will be to find an entry point into the literature.

Let's say you want to research in “**spins in photovoltaic devices**”

Where do you start?

Practice

Start where your knowledge ends

Let's say that you know very little about the topic and so you want to start at the top

Basic Search

Cited Reference Search

Advanced Search

spins in photovoltaic devices



Topic

Search

+ Add Another Field | Reset Form

Broadest possible key word

TIMESPAN

All years

From 2010 to 2017

Start by limiting to the last few years

Practice

The goal is to return too much information and then refine it to a useful amount

Results: 1,710

(from All Databases)

You searched for: TOPIC: (spins photovoltaic devices) ...More

Refine Results

Search within results for...

Filter results by:

- Highly Cited in Field (61) 🏆
- Hot Papers in Field (4) 🔥

Refine

Document Types

- ARTICLE (1,703)
- OTHER (144)
- MEETING (87)
- REVIEW (34)
- UNSPECIFIED (8)

more options / values...

Refine

Too much information!

Page 1 of 171

Select Page

5K

Save to EndNote online

Add to Marked List

Create Citation Report

Analyze Results

- 1. **Solution-processed molybdenum oxide for hole-selective contacts on crystalline silicon solar cells**

By: Tong, Jingnan; Wan, Yimao; Cui, Jie; et al.
APPLIED SURFACE SCIENCE Volume: 423 Pages: 139-146 Published: NOV 30 2017

Get it!

Full Text from Publisher

View Abstract

Times Cited: 0
(from All Databases)

Usage Count

- 2. **N-Doped graphene/PEDOT composite films as counter electrodes in DSSCs: Unveiling the mechanism of electrocatalytic activity enhancement**

By: Paterakis, Georgios; Raptis, Dimitrios; Ploumistos, Alexandros; et al.
APPLIED SURFACE SCIENCE Volume: 423 Pages: 443-450 Published: NOV 30 2017

Get it!

Full Text from Publisher

View Abstract

Times Cited: 0
(from All Databases)

Usage Count

- 3. **... by a serial of boronic acid derivative self-assembled monolayers**

By: Kirbiyik, Cisem; Kara, Koray; Kara, Duygu Akin; et al.
APPLIED SURFACE SCIENCE Volume: 423 Pages: 521-527 Published: NOV 30 2017

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Full Text from Publisher

View Abstract

Times Cited: 0
(from All Databases)

Usage Count

- 4. **An ab initio investigation of phosphorene/hexagonal boron nitride heterostructures with defects for high performance photovoltaic applications**

By: Wang, Ci; Sun, Jie; Zhang, Baitao; et al.
APPLIED SURFACE SCIENCE Volume: 423 Pages: 1003-1011 Published: NOV 30 2017

Times Cited: 0
(from All Databases)

Usage Count

Let's look for a recent review article

Practice

Results: 34


(from All Databases)

You searched for: TOPIC: (spins photo voltaic devices) ...More

Refine Results

Search within results for...

Filter results by:

Highly Cited in Field (6) 

Refine

Publication Years

- 2015 (10)
- 2016 (8)
- 2010 (6)
- 2014 (3)
- 2013 (3)

more options / values...

Refine

Research Domains

- SCIENCE TECHNOLOGY (33)
- SOCIAL SCIENCES (3)

Sort by: Times Cited -- highest to lowest

Sort by popular reviews

Page 1 of 4

Select Page



Save to EndNote online

Add to Marked List

Create Citation Report

Analyze Results

Times Cited: 629
(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 250
(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 134
(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 118
(from All Databases)

Usage Count

1. **Advanced materials and processes for polymer solar cell devices**

By: Helgesen, I
JOURNAL OF

Get it!

This looks like a good starting point

2. **Recent Advances in Singlet Fission**

By: Smith, Millicent B.; Michl, Josef
Edited by: Johnson, MA; Martinez, TJ
ANNUAL REVIEW OF PHYSICAL CHEMISTRY, VOL 64 Book Series: Annual Review of Physical Chemistry Volume:
64 Pages: 361-386 Published: 2013

Get it!

View Abstract

3. **Polymers for electronics and spintronics**

By: Bujak, Piotr; Kulszewicz-Bajer, Irena; Zagorska, Malgorzata; et al.
CHEMICAL SOCIETY REVIEWS Volume: 42 Issue: 23 Pages: 8895-8999 Published: 2013

Get it!

View Abstract

4. **Direct Liquid Coating of Chalcopyrite Light-Absorbing Layers for Photovoltaic Devices**

By: Todorov, Teodor; Mitzi, David B.
EUROPEAN JOURNAL OF INORGANIC CHEMISTRY Issue: 1 Pages: 17-28 Published: JAN 2010

Get it!

Full Text from Publisher

View Abstract

Click here

Practice

Citing Articles: 242

(from All Databases)

For: Recent Advances in Singlet Fission on ...[More](#)

Times Cited Counts

250 in All Databases

248 in Web of Science Core Collection

35 in BIOSIS Citation Index

4 in Chinese Science Citation Database

0 data sets in Data Citation Index

0 publication in Data Citation Index

0 in Russian Science Citation Index

0 in SciELO Citation Index

[View Additional Times Cited Counts](#)

Refine Results

Search within results for...



Filter

H

H

Databases

Sort by: Times Cited -- highest to lowest



Sort by popularity

Page 1 of 25

Select Page



5K

Save to EndNote online

Add to Marked List

1. **Singlet exciton fission in solution**

By: Walker, Brian J.; Musser, Andrew J.; Beljonne, David; et al.
NATURE CHEMISTRY Volume: 5 Issue: 12 Pages: 1019-1024 Published: DEC 2013

Get it!

View Abstract

2. **Exciton diffusion in organic semiconductors**

By: Mikhnenko, Oleksandr V.; Blom, Paul W. M.; Thuc-Quyen Nguyen
ENERGY & ENVIRONMENTAL SCIENCE Volume: 8 Issue: 7 Pages: 1867-1888 Published: 2015

Get it!

View Abstract

3. **Fission of Entangled Spins: An Electronic Structure Perspective**

By: Fong, Xintian; Luzanov, Anatolii V.; Krylov, Anna I.
JOURNAL OF PHYSICAL CHEMISTRY LETTERS Volume: 4 Issue: 22 Pages: 3845-3852 Published: NOV 2013

Get it!

View Abstract

Pentacene and Their Roles in Singlet Fission

By: Nandini
CHEMICAL SOCIETY Volume: 136 Issue: 15 Pages: 5755-5764 Published: APR

Create Citation Report

Analyze Results

Times Cited: 152
(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 72
(from All Databases)

Highly Cited Paper

Usage Count

Times Cited: 68
(from All Databases)

Usage Count

Times Cited: 67
(from All Databases)

Usage Count

Iterate through this process a few times and you will find authors who are active in the area

What did we learn?

Notice that the most-cited review on the topic of “spins in photovoltaic devices” was actually a review on **singlet fission**

And the most-cited paper cited by that review was also about **singlet exciton fission**

This is already a decent indication that “spins in photovoltaic devices” are mostly mentioned in the context of singlet fission.

We can infer three things:

- 1) “Spins in photovoltaic devices” are probably **not well-defined**
- 2) You will probably be able to dig up specific papers on the topic, but reviews will be about **exciton fission**
- 3) The best strategy will be to find a **group of authors** and dig up their papers (see if they list pubs on their websites).

See how much you can learn from two minutes of searching?

Simple Rules for Searching and Organizing

1. Facilitate an in-depth knowledge of your field

Having identified seminal papers, typically by the number of times they are cited, enables to explore the network for other frequently cited papers

2. Identify papers, which are the most important to your research

Papers of extraordinary interest will form the seeds from which you can mine for new literature

3. Stay on-top of the literature

Create citation alerts for the papers of extraordinary interest

4. Archive digital copies

Save the PDF version of the articles within a hierarchically organized folder structure and give the files meaningful names

5. Archive references in a citation program immediately

6. Label unread papers with what you expect from it; use tags and groupings

From: Bauer, "Ten Simple Rules for Searching and Organizing the Scientific Literature"

<http://precedings.nature.com/documents/3867/version/1>

What's Next?

The purpose of this introduction is to help you search the literature

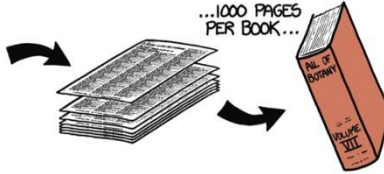
Ultimately, **searching the literature is a skill** that you have to develop and maintain in order to keep up with changing technologies, trends in research and publishers

Conferences are great for seeing what people are trying to publish, but there is no substitute for reading papers that are published

HOW MUCH SCIENCE IS THERE?

SCIENTIFIC PUBLISHING HAS BEEN ACCELERATING—A NEW PAPER IS NOW PUBLISHED ROUGHLY EVERY 20 SECONDS. LET'S IMAGINE A BIBLIOGRAPHY LISTING EVERY SCHOLARLY PAPER EVER WRITTEN. HOW LONG WOULD IT BE?

IF WE CAN FIT 140 CITATIONS PER PAGE...



...AND THEN WE START STACKING BOOKS...



A LIST OF PAPERS PUBLISHED IN 1880 WOULD FILL 100 PAGES.



BY 1920, THE LIST WOULD BE GROWING BY 500 PAGES PER YEAR.



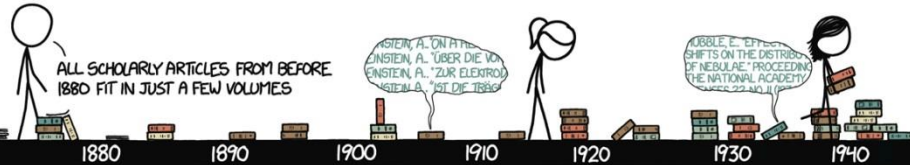
THE 1975 SECTION WOULD FILL FOUR HUGE VOLUMES.



TODAY, WE'RE UP TO 15 VOLUMES PER YEAR—A PAGE EVERY 45 MINUTES.



...THIS IS WHAT THE FULL LIST WOULD LOOK LIKE:



HOW OPEN IS IT?

SINCE THE ADVENT OF THE WEB, MUCH OF SCIENTIFIC PUBLISHING HAS BEEN MOVING TO OPEN ACCESS. ACCORDING TO SCIENCE-METRIX, OPEN ACCESS REACHED A 'TIPPING POINT' AROUND 2011: MORE THAN 50% OF NEW RESEARCH IS NOW MADE AVAILABLE FREE ONLINE.

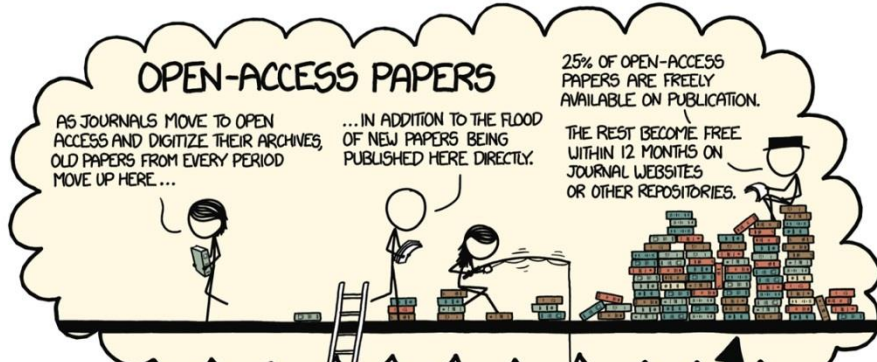
OPEN-ACCESS PAPERS

AS JOURNALS MOVE TO OPEN ACCESS AND DIGITIZE THEIR ARCHIVES, OLD PAPERS FROM EVERY PERIOD MOVE UP HERE...

...IN ADDITION TO THE FLOOD OF NEW PAPERS BEING PUBLISHED HERE DIRECTLY.

25% OF OPEN-ACCESS PAPERS ARE FREELY AVAILABLE ON PUBLICATION.

THE REST BECOME FREE WITHIN 12 MONTHS ON JOURNAL WEBSITES OR OTHER REPOSITORIES.



TRADITIONAL PUBLICATION



1991: PAUL GINSBURG LAUNCHES ARXIV FOR PHYSICS PREPRINTS

1987-89: FIRST ONLINE JOURNALS APPEAR

MOVED TO OPEN ACCESS

1869: FIRST ISSUE OF NATURE

1880: SCIENCE FOUNDED

1999: NIH DIRECTOR PROPOSES AN ARCHIVE OF FREE BIOMED PAPERS

2000: PUBMED CENTRAL DEBUTS PLOS FOUNDED

2001: 30,000 SCIENTISTS CALL FOR BOYCOTT OF JOURNALS THAT DON'T ALLOW FREE ACCESS OR PUBLISH WITHIN 6 MONTHS

2002: BIOMED CENTRAL BEGINS CHARGING \$500 AUTHOR FEE. HWTM AGREES TO PAY AUTHOR FEES FOR OPEN-ACCESS PUBLICATION

2003: PLOS BIOMED LAUNCHED, CHARGES \$1500 AUTHOR'S FEE

2006: U.K. MEDICAL RESEARCH COUNCIL MANDATES FREE ACCESS WITHIN 6 MONTHS. PLOS RAISES TOP AUTHOR FEE TO \$2500, LAUNCHES PLOS ONE, WHICH REVIEWS FOR SCIENTIFIC RIGOR, NOT IMPORTANCE.

2008: NIH REQUIRES THAT PAPERS IT FUNDS BE MADE FREE WITHIN 12 MONTHS. HARVARD FACULTY AGREE TO POST PAPERS IN UNIVERSITY REPOSITORY

2010: PLOS BECOMES PROFITABLE. PLOS ONE BECOMES WORLD'S BIGGEST SCIENTIFIC PUBLISHER BY VOLUME.

2013: WHITE HOUSE ORDERS ALL SCIENCE AGENCIES TO PLAN TO MAKE PAPERS FREE WITHIN 12 MONTHS

2014: EUROPEAN COMMISSION WILL REQUIRE FREE ACCESS WITHIN 6-12 MONTHS

Resources

<https://www.editage.com/insights/tips-for-effective-literature-searching-and-keeping-up-with-new-publications>

<http://libguides.humboldt.edu/c.php?g=303801&p=2028842>

<https://www.sciencebuddies.org/science-fair-projects/competitions/finding-and-accessing-scientific-papers-3/>

From: Bauer, “Ten Simple Rules for Searching and Organizing the Scientific Literature” <http://precedings.nature.com/documents/3867/version/1>