Federated Search: An In-Depth Introduction

Presented by:
Abe Lederman, President and Founder
Deep Web Technologies, Inc.

American Chemical Society Annual Conference – August 17, 2009
The “Google Myth”

If you can’t find it on Google, the information doesn’t exist.
Polymer solar cell - Wikipedia, the free encyclopedia
Jul 7, 2009 ... Polymer solar cells are a type of organic solar cell (also called plastic solar cell), or organic chemistry photovoltaic cell that produce ...
Device physics - Architectures - Conclusion
en.wikipedia.org/wiki/Polymer_solar_cell \( \text{Cached} \) \( \text{Similar} \) \( \text{en.wikipedia.org/wiki/Polymer_solar_cell} \)

Solar cell - Wikipedia, the free encyclopedia
In 1970 the first highly effective GaAs heterostructure solar cells were created by Zhores Alferov and his team in the USSR. Metal Organic Chemical Vapor ...
en.wikipedia.org/wiki/Solar_cell \( \text{Cached} \) \( \text{Similar} \) \( \text{en.wikipedia.org/wiki/Solar_cell} \)

Renewable Energies: The Promise Of Organic Solar Cells
In the race to renewable energy, organic solar cells are now really starting to take off. They can be manufactured easily and cheaply, they have low ...
www.sciencedaily.com/releases/2009/04/0904091644.htm \( \text{Cached} \) \( \text{Similar} \) \( \text{www.sciencedaily.com/releases/2009/04/0904091644.htm} \)

Chemistry Discovery Brings Organic Solar Cells A Step Closer
Inexpensive solar cells, vastly improved medical imaging techniques and lighter more flexible television screens are among the potential applications ...
www.sciencedaily.com/releases/2009/01/0901151645.htm \( \text{Cached} \) \( \text{Similar} \) \( \text{www.sciencedaily.com/releases/2009/01/0901151645.htm} \)

Researchers Develop Efficient Organic Solar Cell
Dec 13, 2004 ... As the price of energy continues to rise, businesses are looking to renewable energy for cheaper sources of power.
www.physorg.com/news2339.html \( \text{Cached} \) \( \text{Similar} \) \( \text{www.physorg.com/news2339.html} \)

Organic Solar Cells Get A Bubble Boost
Organic solar cells that can be produced easily and inexpensively are the perfect solution to future 'personalized' power generation.
www.scientificblogging.com/.../organic_solar_cells_get_bubble_boost \( \text{Cached} \) \( \text{Similar} \) \( \text{www.scientificblogging.com/.../organic_solar_cells_get_bubble_boost} \)

UV Startup, Soluxra, to Form Around Organic Solar Cell Technology...
A new startup company is in the works at the University of Washington, based on
organic solar cells

1. **Organic solar cells: An overview**
   - Hoppe, Harald (Linz Inst. for Organic Solar Cells, Physical Chemistry, Johannes Kepler University, Linz 4040, Austria), Steffens, Nyazii S.
   - Journal of Materials Research, v 18, n 7, p 1924-1945, July 2004
   - Engineering Village

2. **Organic solar cells: An overview**
   - Hoppe, Harald, Steffens, Nyazii S.
   - Web of Science

3. **Solar energy conversion processes in organic solar cells**
   - Xu, Zhizhong (Department of Materials Science and Engineering, University of Tennessee, Knoxville, TN 37919, United States; Zang, Huidong (Shanghai Jiao Tong University, Shanghai, China
   - JOM, v 60, n 8, p 49-53, September 2008
   - Engineering Village

4. **Organic solar cells: Overcoming recombination**
   - Moghe, Michael D.
   - Nature Photonics 2008-05-01
   - The construction of a polymer solar cell that can successfully collect an electron and hole for almost every incident photon suggests that great improvements in the efficiency of photovoltaics should be possible.
   - AIP (Astrophysical Data System Abstract Service)

5. **Organic solar cells: an overview focusing on active layer morphology**
   - L. Beraunil T., D. Venkataraman
   - Photosynthesis research 2008-01-13
   - Solar cells constructed of organic materials are becoming increasingly efficient due to the discovery of the bulk heterojunction concept. This review provides an overview of organic solar cells. Topics covered include a brief history of organic solar cell development, device construction, definitions, and characteristics, and heterojunction morphology and its relation to device efficiency in conjugated polymer/fullerene systems.
   - Pubmed

6. **Organic solar cells: An overview focusing on active layer morphology**
   - Benard T., Venkataraman D.
   - PHOTOSYNTHESIS RESEARCH Volume: 87 Issue: 1 Pages: 73-81 2005-01-01
   - Web of Science
The Trouble with Google Scholar

- “Scholarly content” intermixed with “non-scholarly” content
- Don’t know what is included and what’s not
- Poor relevance (citation counts don’t seem to help)
- Unable to limit searching to specific sources
- Difficult to find the needles in the haystack
An Alternative – Federated Search

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<td>“Distributed information retrieval”</td>
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* Number of occurrences on Google (August 7, 2009)
Federated Search: A Definition

Federated Search is the process of performing a simultaneous real-time search of multiple diverse and distributed sources from a single search page, with the federated search engine acting as intermediary.

-From “A Federated Search Primer” by Sol Lederman
Let’s Break it Down

Federated

Simultaneous

Real-Time

Multiple

Diverse and Distributed Source

Single Search Page

Federated Search Intermediary
Content is combined from different sources saving the effort of searching sources one at a time.
“Simultaneous”

Federated Search is the process of performing a simultaneous

Queries all user’s selected collections at once, otherwise it would be unacceptably slow.
Federated Search is the process of performing a simultaneous real-time search. Federated search occurs live and results are current. There’s no stale content.
Federated Search is the process of performing a simultaneous real-time search of multiple sources. The value of federated search to the researcher increases as the number of sources increases.
“Diverse and Distributed Sources”

Federated Search is the process of performing a simultaneous real-time search of multiple diverse and distributed sources.

Typically, search collections contain different search interfaces, with different search fields and result formats.
Federated Search is the process of performing a simultaneous real-time search of multiple diverse and distributed sources from a single search page.

Federated search engines provide one stop access to information.
“Federated Search as Intermediary”

Federated Search is the process of performing a simultaneous real-time search of multiple diverse and distributed sources from a single search page, with the federated search engine acting as intermediary.

The federated search submits the user’s query to a number of content sources, then combines the results that are returned into one ranked list.
Not all Federated Search Engines are Created Equal

- Quality of search results
  - Connectors, fielded searches and relevance ranking

- User Interface
  - Feature sets, incremental results, web 2.0 interface

- Results Delivery
  - Aggregation, clustering, filtering and sorting, alerts
Select your collections or select “All”

ScienceResearch.com would like to thank Grace Baysinger, for volunteering to be the editor for our Chemistry collection.

Grace Baysinger is the Head Librarian & Bibliographer, Swain Library of Chemistry and Chemical Engineering, Stanford University.

Please contact Grace Baysinger for questions or collection suggestions.
Your search: **Full Text: Nucleophilic additions** yielded 664 top results from at least 62,397 found.

1. **Nucleophilic Addition of Cyano Ions**
   - Lombardo, G., Bolognesi, C., and Cremonesi, G.
   - *Synthesis* 2000-01-05
   - Thieme

2. **Nucleophilic additions of the cyanide to 1,3 diene**
   - Jacquod-Rousseau, Sandrine; Schmid, Urs; and Zbinden, Claus
   - IngentaConnect

3. **Nucleophilic Additions of Niobium Enol and Aldimines**
   - Ananda, Carla K.; Kelii, Patricia
   - *Letters in Organic Chemistry, Volume 1, Number 2, April 2004*, pp. 109-111(3)
   - IngentaConnect

4. **Nucleophilic addition of lactam-derived enol triflates to aldehydes with nickel(II) and chromium(II) salts**
   - L. P. Easton, Dale G. R.
   - *Canadian Journal of Chemistry, Volume 92, Number 2, 1 February 2004*, pp. 122-128
   - Oxford University Press

5. **Nucleophilic Additions to Fused bicyclic five-membered ring oxocarbenium ions**
   - *Evidence for Preferential Attack on the Inside Face* (Preferential Attack on the Inside Face. Evidence is provided that nucleophilic attack on five-membered ring oxocarbenium ions occurs from the inside face of the envelope... the accepted model used to understand...)

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**Collection Status**

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Benefits of Federated Search

- One-stop access to multiple information sources
  - Users don’t need to know where/how to search
  - Saves researcher time and money
  - Improves utilization of information sources
- Consolidated, ranked and de-duplicated results
  - Important results are not missed

Information Discovery
Resources

- The Federated Search Blog (www.federatedsearchblog.com)
  - Quality not Quantity Whitepaper
  - Federated Search Primer
  - Sample Vendor Checklist

- Deep Web Technologies Blog (www.deepwebtechblog.com)

- Federated Search: Solution or Setback for Online Library Services
  Edited by Christopher Cox
Need Federated Search?

Deep Web Technologies is looking for beta partners for a chemistry-focused federated search engine.
Thank You!

Contact me via email:
abe@deepwebtech.com