FreePint Subscription Report

June 2014

Product Review of ScienceDirect Reference Modules

In-depth, independent review of the product, plus links to related resources

"...Reference Modules combine thousands of related reference work articles into a single "go-to" source of subject-related information that is continuously updated by experts..."

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For queries about this product, please contact Elsevier at:
Phone: +31 (0)20485 3767
Email: nlinfo@elsevier.com
www.info.sciencedirect.com/referencemodules

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Contact Information

Free Pint Limited
4-6 Station Approach, Ashford,
Middlesex, TW15 2QN, United Kingdom
Registered Office: Delaport Coach House, Lamer Lane, Wheathampstead, Herts, AL4 8RQ
Registered Number: 3754481

Telephone: 01784 605000
International: +44 1784 605000
Email: support@freepint.com
Web: http://www.freepint.com/

Introduction & Contact Details

By Yulia Aspinall
View author biography

Introduction

In September 2013, Elsevier announced the launch of Reference Modules, a reference solution integrated into Elsevier's ScienceDirect platform.

Elsevier is one of the world's leading providers of scientific, technical and medical information products and services.

The company works in partnership with the global science and health communities to publish nearly 2,200 journals, including The Lancet and Cell, and over 25,000 book titles, including major reference works from Mosby and Saunders. Elsevier's online solutions include ScienceDirect, Scopus, SciVal, Reaxys, ClinicalKey and Mosby's Suite, which provides research and healthcare institutions with access to comprehensive content to deliver better outcomes more cost-effectively.

Introduction: Product

Reference Modules combine thousands of related reference work articles into a single "go-to" source of subject-related information that is continuously updated by experts. The initial modules available to researchers are:

- Chemistry, Molecular Sciences and Chemical Engineering
- Earth Systems and Environmental Sciences.

More are planned in the near future.

Elsevier continues to publish stand-alone Major Reference Works, which have been typically used by researchers to get up to speed quickly on topics outside of their expertise.

Major Reference Works provide access to a large amount of relevant information but are updated only once in five-to-seven years, when the lengthy publishing cycle is completed. For that reason, Reference Modules will eventually replace the Major Reference Works.

Reference Modules are constantly updated by an expert editorial board and are intended to provide researchers with up-to-date, peer-reviewed, reliable interdisciplinary content to allow researchers to familiarise themselves with a new area, and then go into more specific chapters according to their research requirements.

Contact Details

Elsevier
225 Wyman Street
Waltham, MA 02451
USA

Tel (US): 1-781-663-5200
Email: m.mcmahon.1@elsevier.com
Website: www.elsevier.com
Twitter: @SciTechBookNews

Sources, Content and Coverage

The "launch" subjects of Reference Modules are:

- Earth Systems and Environmental Sciences
- Chemistry, Molecular Sciences and Chemical Engineering.

Each module brings together thousands of reference articles from interdisciplinary scientific fields to give researchers a launch pad from which to explore an unfamiliar scientific area and quickly move forward.

Elsevier continues to publish traditional scientific encyclopaedias, known as "major reference works" every year. Those works are a valuable resource for building foundational knowledge in the desired area. Over 130 major reference works are available, but as mentioned previously they suffered from not being regularly updated.

Reference Modules

Articles: articles for Reference Modules are written by individuals and/or groups of experts in the field under the guidance of Subject Editors who are guided by the Editor-in-Chief.

The articles are written at a level that allows upper-undergraduate students to understand the material, while providing active researchers, whether in academia, government, or corporations, with an authoritative and up-to-date source of foundational reference material for all aspects of the field and its neighbouring disciplines.

Editorial boards: in Reference Modules, the articles are kept current by a professional editorial board.

Editorial boards comprise teams of accomplished subject-matter experts who select, organise and review the content in each of the modules. There is an editorial board for each of the Reference Modules led by well-respected researchers. Every article is given a time stamp, indicating to users the date of the last review or update - this is an important addition to inform researchers about the currency of each article.

Subject hierarchies: the process of building and updating reference modules includes organising content from Elsevier Reference Works into interdisciplinary subject hierarchies.

The subject hierarchy is determined by the expert Editorial Board and technically checked by Elsevier taxonomists. Once the content is sorted into hierarchies, editorial boards review all content for currency. The articles are either confirmed to be current, updated, or removed and replaced. This is a continuous process, with the result that Reference Modules are "living" products.

Earth Systems and Environmental Sciences

The Reference Module for Earth Systems and Environmental Sciences *(Figure 1)* contains over 4,200 articles including those from 19 Elsevier major reference works, together with new and updated articles specially written for the module:

- 900 new articles
- 9,000 images
- 4,000 contributors.

Figure 1: Earth Systems and Environmental Sciences homepage

Earth Systems and Environmental Sciences encompass a broad range of research areas concerning the history of the planet, its geology, oceans, atmosphere, energy and other natural resources.

This multidisciplinary approach involves many different aspects of scientific research that must be brought together, in order to elucidate the processes and interactions between the earth's atmosphere, hydrosphere, cryosphere, biosphere, and geosphere. Accordingly, this module includes major sections that deal with each of these disciplines, each containing hundreds or thousands of articles.

The editorial board for this Reference Module comprises an international panel of experts across many different disciplines.

Chemistry, Molecular Sciences and Chemical Engineering

The Chemistry, Molecular Sciences and Chemical Engineering module *(Figure 2)* contains over 4,600 articles including articles from 22 Elsevier major reference works and also includes new and updated articles specially written for the module:

- 250 new articles
- 50,000 images
- 4,100 contributors.

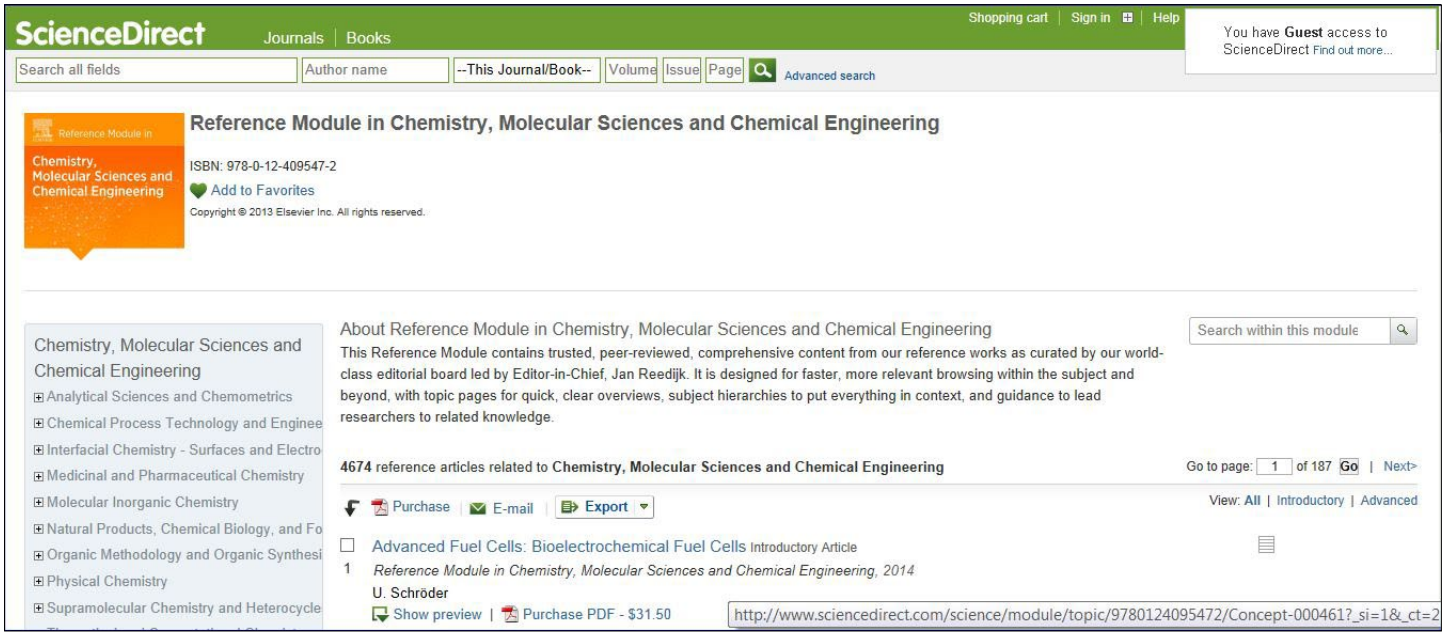

Figure 2. Chemistry, Molecular Sciences and Chemical Engineering homepage

Module divisions: the module has been subdivided in 10 subjects or groups of subjects, each coordinated by a subject editor. The list of these 10 subjects, and their interrelationships is illustrated in *Figure 3*.

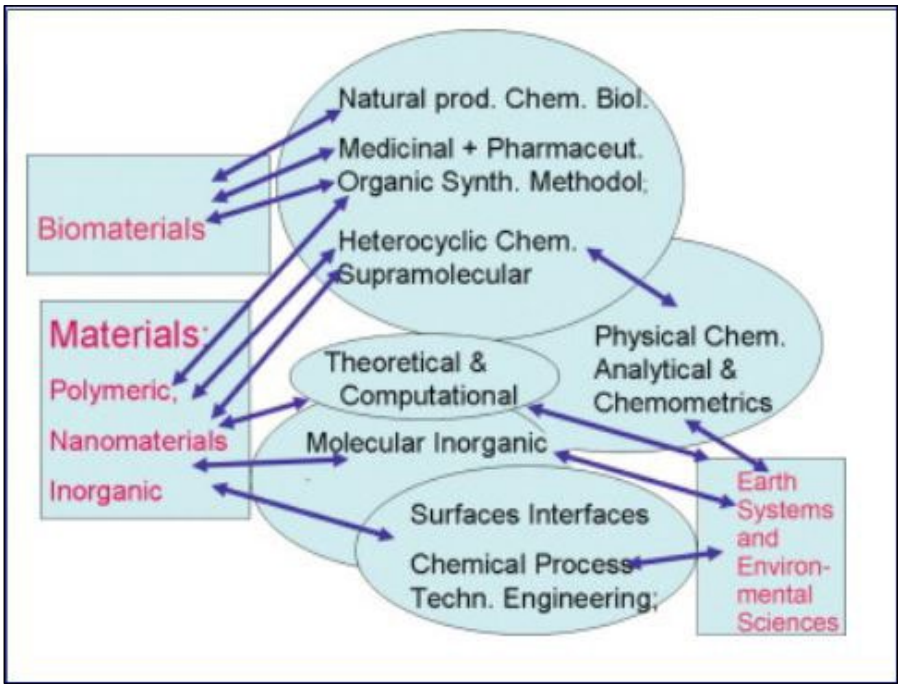

Figure 3. The interrelationships between the subjects and fields

Each of the 10 topics have 4-12 subtopics below them. Below that there can be a number of sub-subtopics. This allows the reader to gain very easy and quick access to the underlying full chapters.

Elsevier has had a long tradition in covering reference works in chemistry, molecular sciences and chemical engineering. The editorial board now makes sure that all the articles are up-to-date.

FreePint's View: Sources

✓ *Comprehensive, reliable content*	✓ *Good starting point to build subject knowledge*
✓ *Updated regularly by experts in the area (editorial board)*	✗ *List of reference titles incorporated into each module is difficult to locate.*
✓ *Good visibility of editorial board members*	

Reference Modules form part of ScienceDirect's content and can be searched together with other ScienceDirect resources or separately.

The Chemistry, Molecular Sciences and Chemical Engineering Reference Module homepage is presented in *Figure 4*.

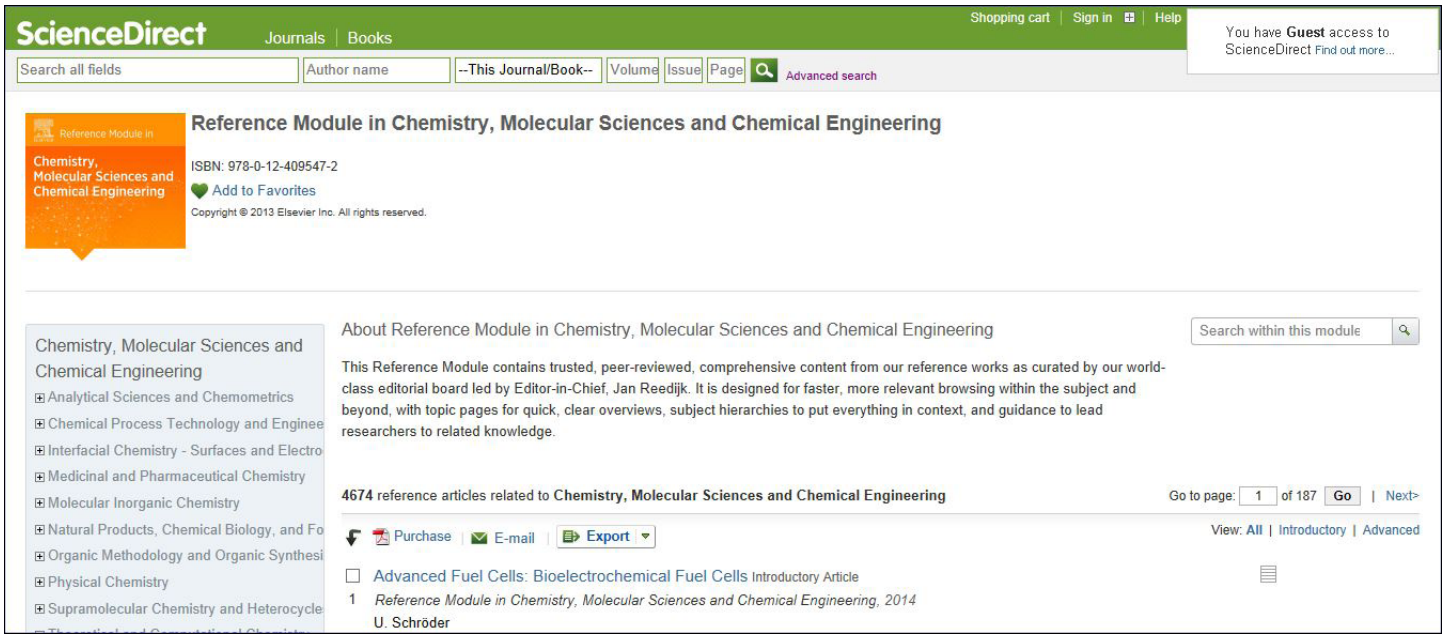

Figure 4: Homepage for Chemistry, Molecular Sciences and Chemical Engineering Reference Module

In the central area of the page, researchers can browse through a list of the 4,674 (and growing) articles in the module, or enter their search terms in the box on the right hand side to search the module content.

General information about the module, such as Aims and Scope, Editor Biographies, Editor's notes and the Editorial Board are shown at left.

A subject hierarchy for the module is displayed on the left side of the homepage. Clicking on a topic in this subject hierarchy opens a topic page that displays links articles related to that topic and all of its subordinate topics.

Many topic pages also display a featured article. Featured articles are freely accessible to all users.

When a user submits a search from a topic page, only the articles related the topic and its subordinate topics are searched. This allows the user to combine subject browse and search to get precise results.

The Aims and Scope page provides an introduction to each Reference Module, Editor's notes describe the structure and the content of the module *(Figure 5)*, whilst Editor Biographies and The Editorial Board are self explanatory.

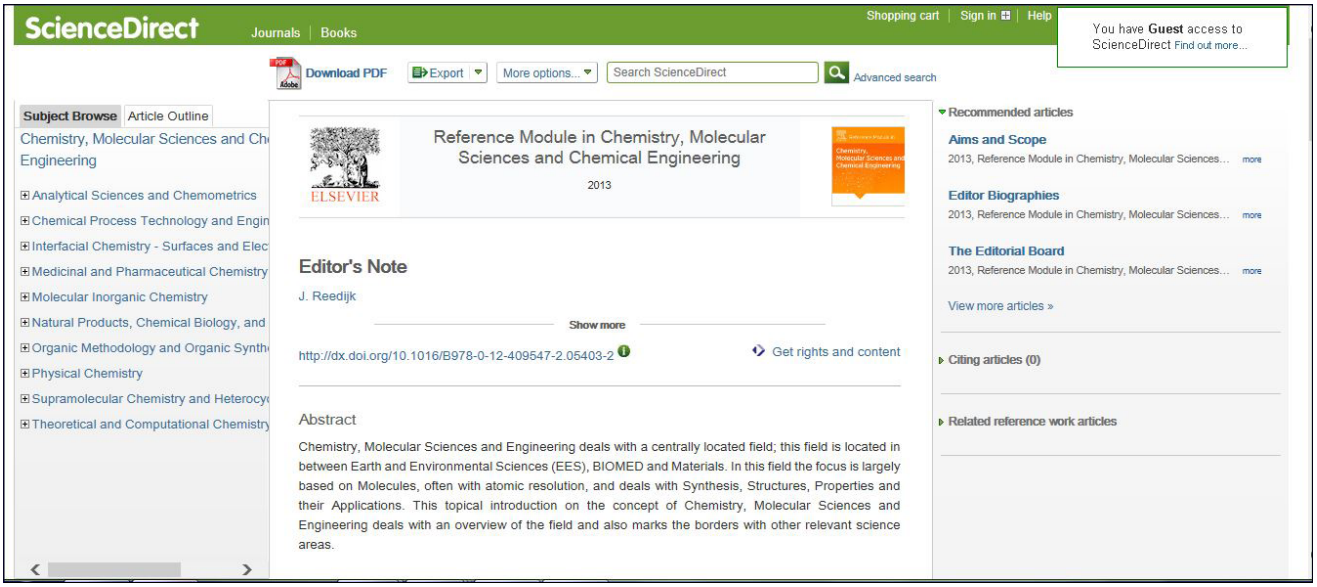

Figure 5: Editor's note on a Reference Module homepage

Researchers can search inside the module using the search box located on the homepage. Following displaying the results, users can view detail of each article.

The detailed information displayed in the centre of the screen and includes options for full text access, Display Abstract, Keywords and a footnote showing the article update history *(Figure 6)*.

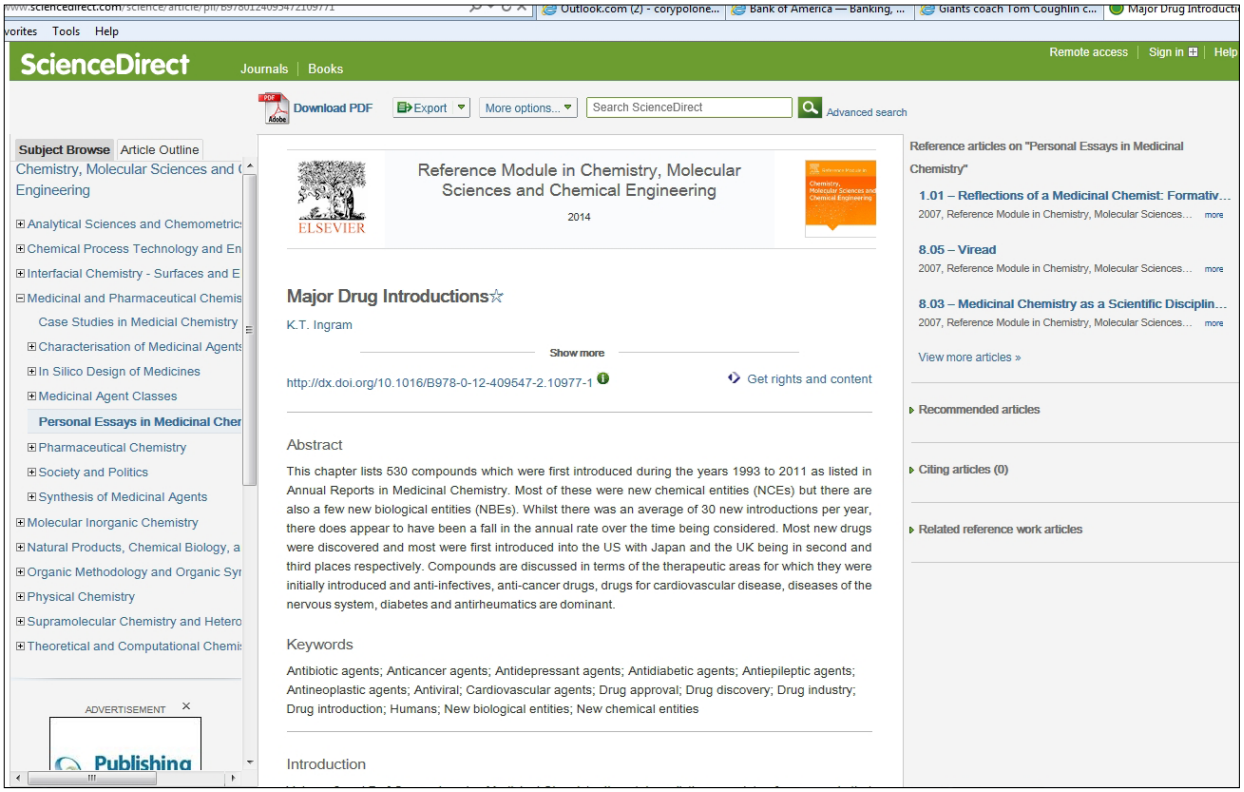

Figure 6: Detailed information displayed on the Reference Module page

On the left hand side of the page users can see where the reference is located in the module hierarchy; here they also have the opportunity to browse and display related information using the hierarchical tree.

On the right hand side of the screen researchers can view references on the topic from the same hierarchy plus recommended, cited and related "reference work" articles.

Detailed information on each topic-related article contains options for full text access, first page preview and authors' curricula vitae.

The Earth Systems & Environmental Sciences Reference Module is organised similarly to the Chemistry, Molecular Sciences and Chemical Engineering Reference Module. Users can search inside the module or browse topics from the homepage or use the hierarchy.

To search Reference Modules as part of ScienceDirect content, users can enter the keyword or words in the basic search box on the ScienceDirect homepage *(Figure 7)*.

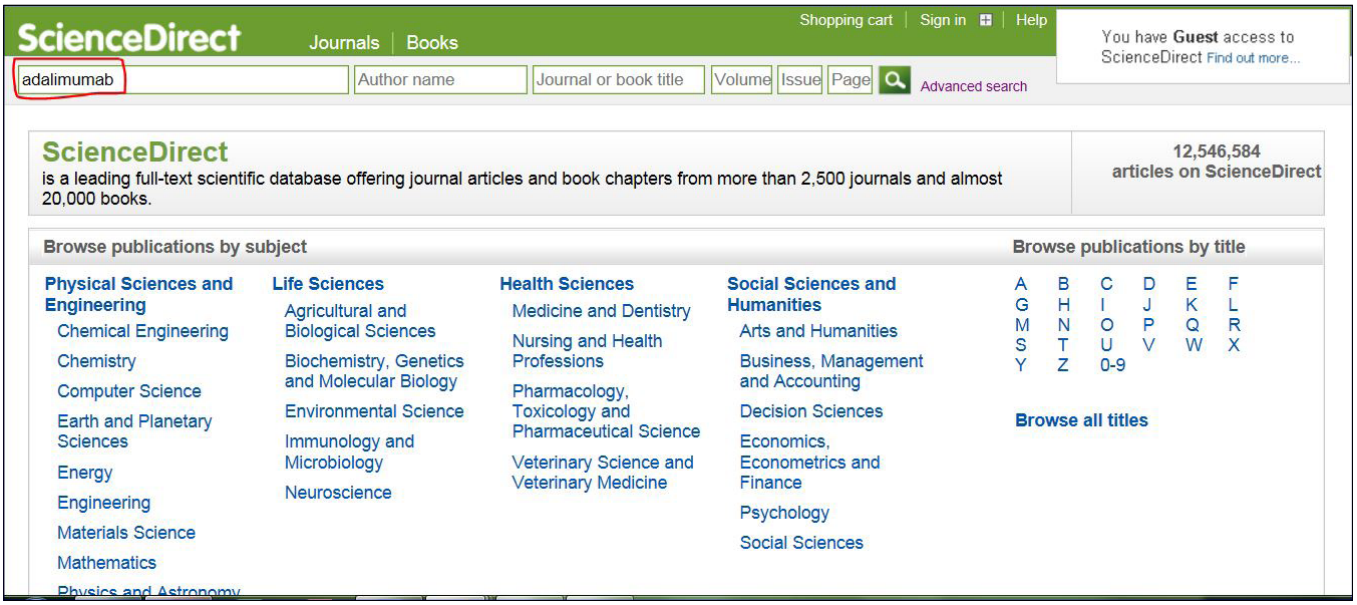

Figure 7: ScienceDirect homepage

On the results page "Reference Works" titles can be extracted by using the refining options on the left hand side of the screen and selecting "Reference Works" in the Publications list *(Figure 8)*.

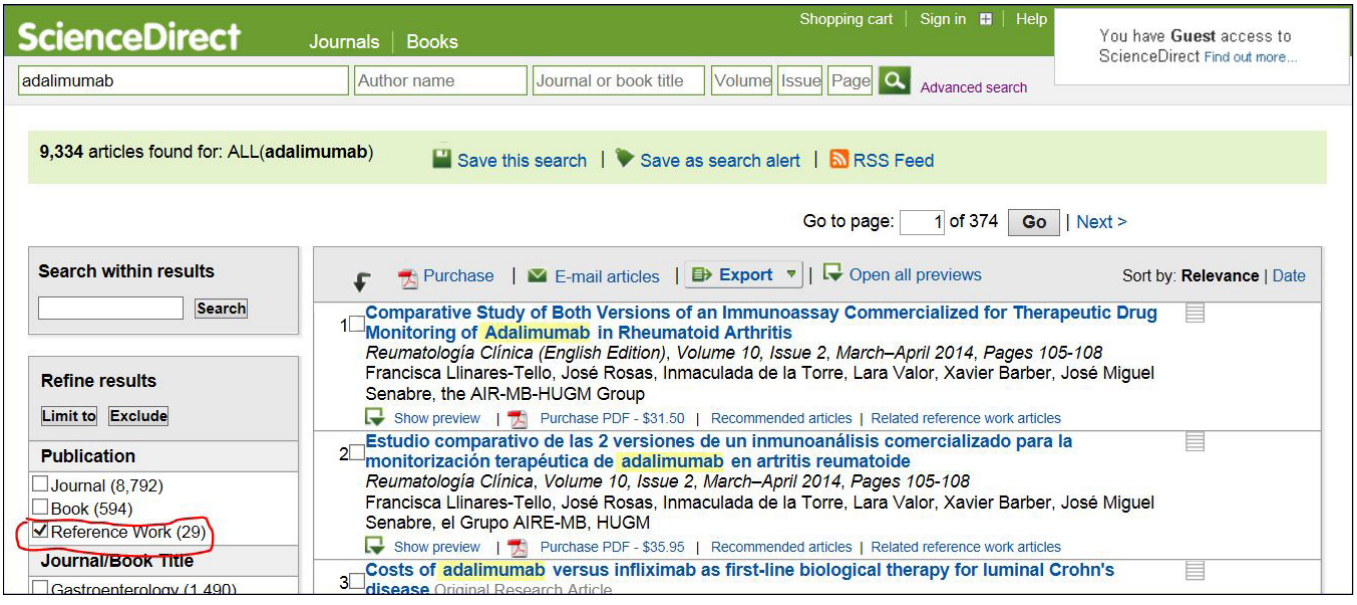

Figure 8: Limiting results to Reference Work titles

Having selected titles from Reference Works, on the subsequent page users can choose to display results only from "Reference Modules" by limiting "journals/book titles" to "Reference Module in Chemistry Molecular Sciences and Chemical Engineering" in this example *(Figure 9)*.

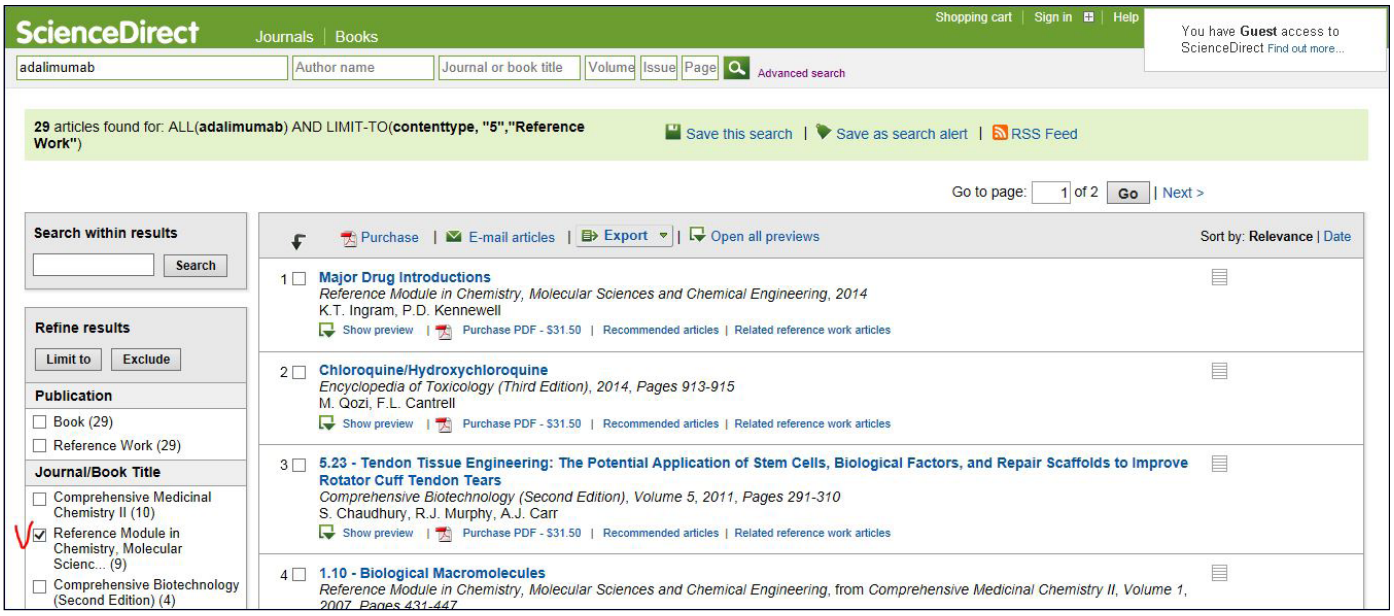

Figure 9: Limiting results to "Reference Module" titles

On the following page the results from Reference Module are displayed *(Figure 10)*.

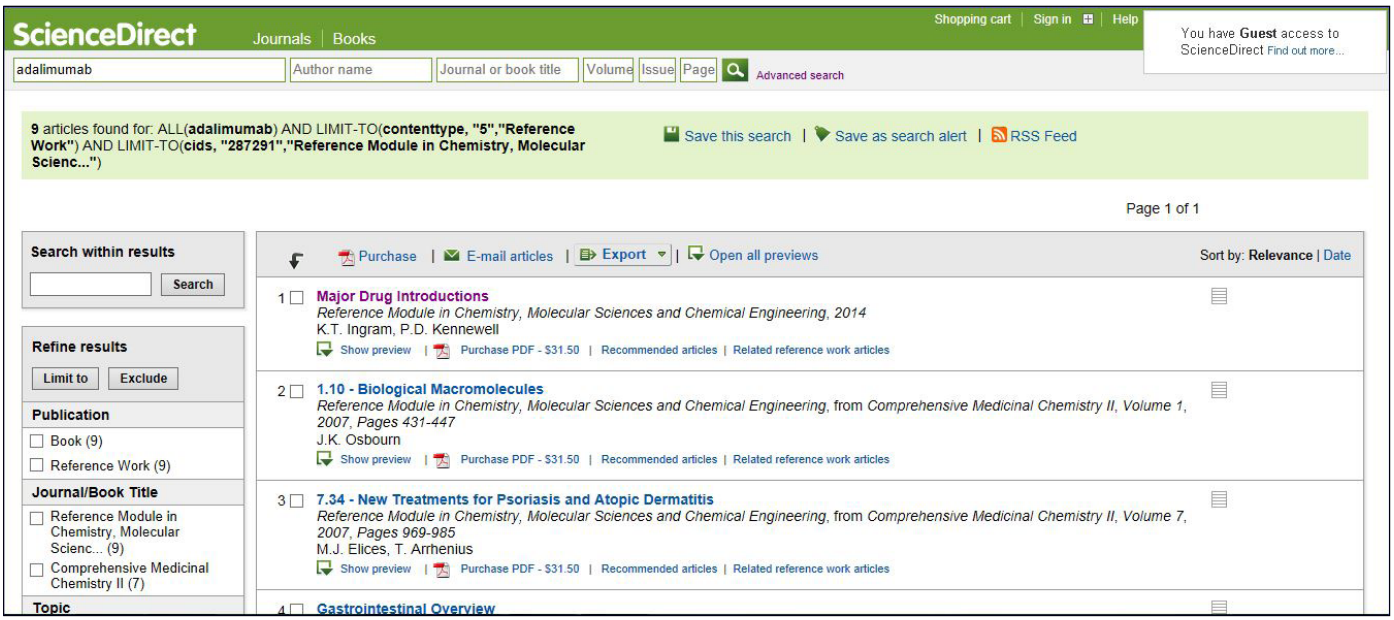

Figure 10: Results from Reference Module

From this page users can filter titles further using the "Refine Results" area on the left hand side of the screen. By using links in the bar above the titles users can purchase full text articles (if they do not have an institutional subscription), email, export to an RMS (reference management system), and open previews of one or several titles.

Titles can be sorted by relevance (the default option) or date of the publication. The search can be saved and an alert created to receive future updates.

Each title has several links allowing users to show a preview, purchase or access a full PDF if a subscription is available.

By clicking on the title users can view detailed information which is displayed on the Reference Module page *(Figure 6)*.

The orange (Chemistry Molecular Sciences and Chemical Engineering) or blue (Earth Systems and Environmental Sciences) icons with the name of the module take users to the Reference Module homepage, located at the top of the page, although it should be noted that there are no direct links to the Reference Modules page from the ScienceDirect homepage.

From the ScienceDirect homepage users can search Reference Module content using Advanced Search (Figure 11), selecting the "Reference Works" option at the top of the search box and clicking on the "A Specific Reference Work" link below.

Researchers need to open a drop down menu and select the desired Reference Module from the list of all Reference Works available. They can enter search terms in the search boxes provided and choose relevant fields for the search from the drop down menu (abstract, author, specific author, chapter titles, subheadings, references, full text).

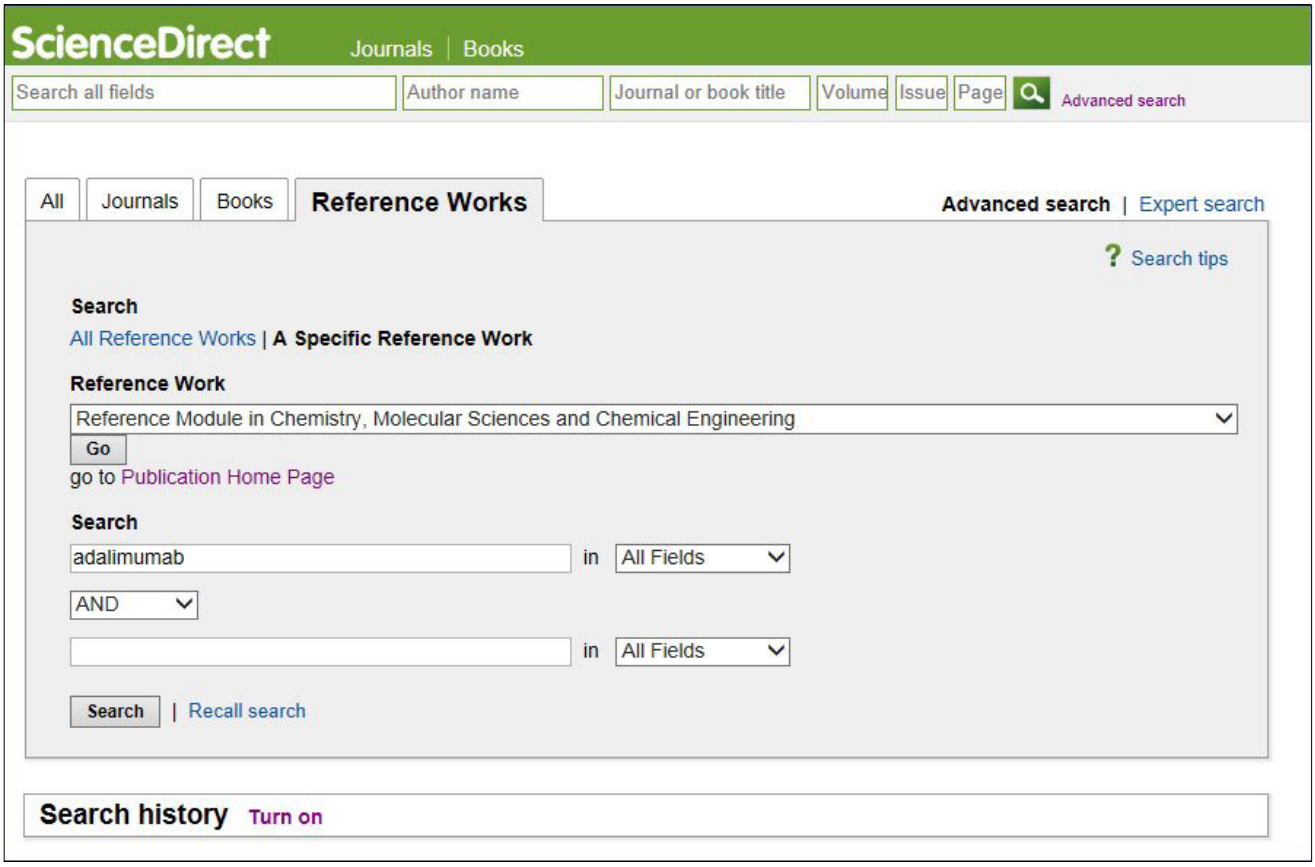

Figure 11: Advanced search page

Users can access the selected Reference Module homepage from the list of the resources available on ScienceDirect by clicking the letter "R" in the "Browse publications by title" link on the right hand of the screen *(Figure 12)* and choosing the relevant Reference Module from the list of the resources. Or they can simply type "Reference Module" into the "journal or book title" search box in the top banner.

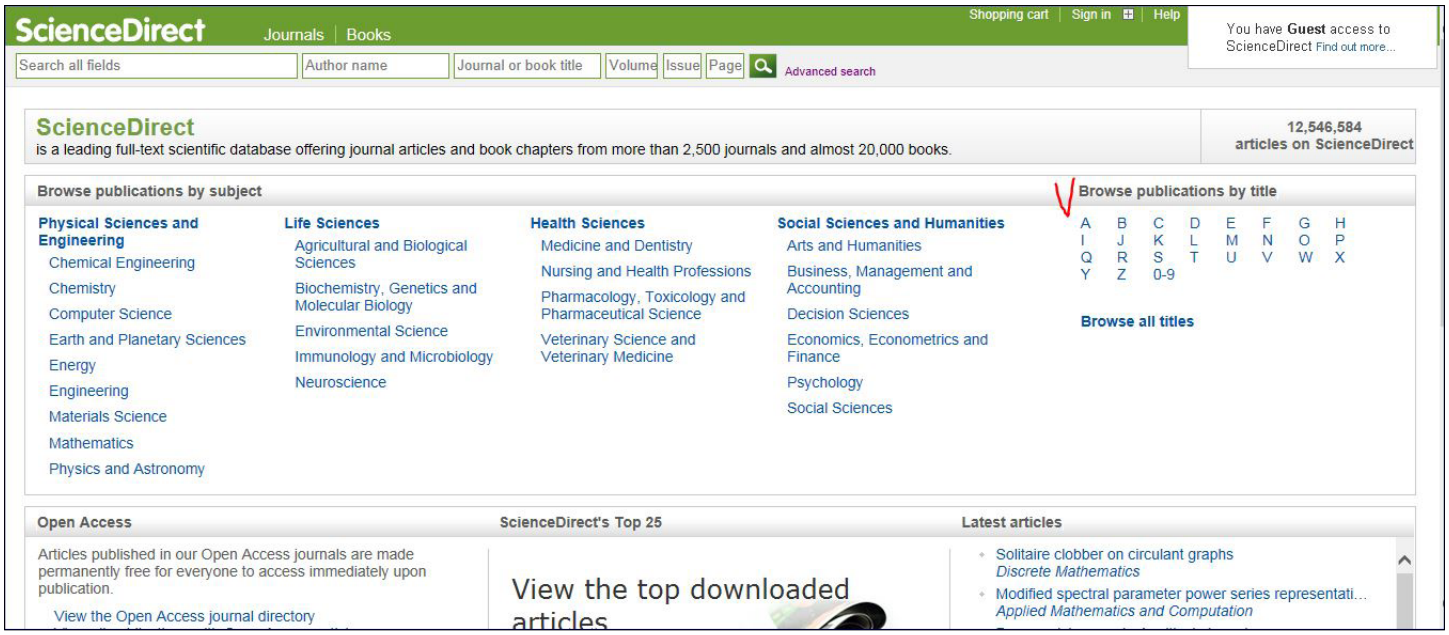

Figure 12: ScienceDirect homepage

Outputs

References can be exported to reference management systems (RMS) such as Mendeley or RefWorks or downloaded as plain text or EndNote files.

References cannot be saved in Excel or Word directly from the webpage, but if saved in RMS or displayed as plain text could be exported to Word.

Users can share articles with colleagues using the "email" link which can be found above the titles.

Unfortunately there are no personalisation features available on the webpage, and therefore users do not have an option to save links to their chosen ScienceDirect resources, abstracts or authors' information on the page in order to return to the collection without going through the process of finding the information on the website again.

FreePint's View: Technology

✓ *Easy to search and navigate Reference Module homepage*	✓ *Ability to search Reference Modules directly using ScienceDirect advanced search*
✓ *Comprehensive hierarchy links for further exploration*	✗ *Website could benefit from personalisation features.*

Researchers in science and technology often need to get up to speed quickly about topics outside of their expertise.

The common starting points are traditional search engines or online wikis, though each has its limitations. Search engines compile irrelevant as well as relevant results, making it hard to find the desired content.

Researchers who have access to Elsevier products typically rely on reference works for foundational content. The key challenge is that traditional reference works can only be updated by publishing a new edition every few years so their content can be quite out-of-date.

To create a resource that is both authoritative and up to date, Elsevier has launched Reference Modules, which update Reference Works with regular updates and create new articles as deemed necessary by experts in the field. Two initial Reference Modules have been recently introduced:

- Chemistry, Molecular Sciences and Chemical Engineering
- Earth Systems and Environmental Sciences.

Reference Modules combine thousands of related reference work articles into a single source of information that is continuously updated by experts. Elsevier plans to develop more modules in the coming years.

Value

Time savings: As researchers often have to familiarise themselves with new topics in different related disciplines, having access to up-to-date, reliable, comprehensive, interlinked, peer-reviewed scientific and technical content in one place enables them to save considerable time, which otherwise needs to be spent browsing multiple resources.

Improved outcomes and quality of research: Reference Modules provide access to thousands of authoritative, peer-reviewed articles that are continuously reviewed and updated as needed. All these reduce the risk of using out-of-date and unreliable information, which may come with reliance on search engines.

Secure findings: Most researchers are under increasing pressure to win funding and obtain valuable research outcomes in shorter periods of time. And, as research becomes more interdisciplinary, researchers must explore topics outside their areas of expertise. Reference Modules are designed for faster, relevant browsing both within the subject and beyond. This provides researchers with quick, clear overviews, subject hierarchies to put everything in context, and guidance to lead them to related knowledge.

Administration

Usage statistics can be obtained through the ScienceDirect administrative tool.

Product Updates

Elsevier is planning to release a new module in 2014, and surely many researchers will look forward to this.

Pricing

Institutions and individuals interested in Elsevier's Reference Modules can obtain the first two modules through a subscription model, together or separately.

Competitor Landscape

Reference Modules are unique offerings. They combine comprehensive peer-reviewed content with easy-to-navigate tools for users to build foundational, interdisciplinary knowledge, keep current with new development in the fields of interest, explore new and related topics.

By providing access to Reference Modules, librarians and information managers ensure their end users have access to a respected, reliable product to facilitate superior research outcomes.

FreePint's View: Value

Scientific and technological researchers often face the challenge of working on projects outside their areas of expertise. They can build knowledge browsing the free internet content, but they will always run the risk of compromising their research by using out-of-date or unreliable information.

Elsevier's products such as ScienceDirect are well known in the scientific world, and are respected in providing access to valuable, trustworthy content.

In the past researchers who had access to ScienceDirect could use Major Reference Works to build foundational knowledge of a target topic. This resource had the drawback of not being regularly updated.

Reference Modules have been introduced recently to mirror, to some extent, traditional sets of reference works/encyclopaedias, but enhanced with continuously updated articles.

There are two modules available at present:

- The **Reference Module for Chemistry, Molecular Sciences, and Chemical Engineering** contains more than 4,600 articles from 4,100 contributors and 50,000-plus images
- The **Reference Module for Earth Systems and Environmental Sciences** holds more than 4,200 articles from 4,000 contributors and 9,000-plus images.

Researchers who navigate Reference Modules can also expand their knowledge by navigating subject hierarchies. Reference Modules are updated by professional Editorial Boards. These boards, made up of subject matter experts, review thousands of articles each year to ensure accurate and current module content. The value of such an information repository is substantial and can save researchers time, improve outcomes and the quality of their research, and support findings.

Users can search and access Reference Modules from the ScienceDirect website. The process is intuitive for experienced users, but new users may find it less simple initially to find their way to a Reference Module homepage. A news or latest release portlet linking to Reference Modules on the ScienceDirect homepage could make access easier.

There is a vast amount of information contained within each Reference Module. Users have options to export references into a reference management system and share titles with colleagues via email. Perhaps some personalisation features, such as the ability to save articles of interest in a personal folder, would be useful to incorporate in future releases.

Overall, Reference Modules are excellent sources of difficult-to-find, reliable information which not only provide researchers with detailed subject knowledge, but allow them to monitor subject development and related disciplines using hierarchy.

✓ *Unique in competitive landscape in providing continuous updates on core reference materials* ✓ *Connects disparate subjects to support cross-disciplinary research*	✗ *Limited modules at present (vendor plans to roll out more)*

About the Reviewer

Yulia Aspinall, PhD is an independent consultant in biopharmaceutical strategic information and intelligence. Her consultancy YVAInfo specialises in applying the tools and processes of knowledge and information management (KIM) to establish channels for collecting, analysing and sharing intelligence on competitors. Yulia also developed PharmaInfoLine - a free website for information professionals in pharmaceutical industry. Her articles on competitive intelligence and information resources are published in FreePint and in Business Information Review.

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