The Thomson Scientific Pick of 2005

Kim Yeatman
Thomson Scientific
January 2006

The Thomson Scientific information portfolio has expanded significantly in the past three years, giving customers the access they requested to an unprecedented range of quality information sources, tools and technologies. I delved deep into the databases to pull out some of the notable facts, figures and statistics revealed by our information during 2005.

Take your pick from:

1. Hot research areas/researchers
2. Doctors of the decade
3. Most cited countries
4. Most prolific/highest impact journals
5. Countries with the most inventive activity
6. Technology areas with the most (and least) number of patent applications
7. New Manual codes reflect areas of technology growth
8. Top-selling Engineering Standards
9. Measuring messaging: what do clinicians value most?
10. Pharmaceutical regulatory trends
11. The most popular KnowledgeLink newsletter articles

1. Hot research areas/researchers

The March/April 2005 edition of *Science Watch*[1] (our subscription newsletter that tracks trends and performance in basic research) identified the "hottest research" of 2003 – 2004, picking out authors who had published the greatest number of Hot Papers over the preceding two years. The Thomson Scientific Hot Papers database tracks journal articles published during the most recent two-year period that in the most recent two-month period have attracted significantly more attention than papers of the same age in the same field. Leading the field in this survey was the University of Hong Kong's Malik Peiris[2] with nine highly cited reports on severe acute respiratory syndrome (SARS). The March-April 2006 issue of *Science Watch* will perform the same analysis of Hot Papers for 2004 – 2005.

Did you know you can access rankings of 2005's top ten most cited researchers in 22 fields via *in-cites*[3]? This is our free web-based service that looks behind the scenes of scientists, journals, institutions, nations, and papers selected by *Essential Science Indicators*[4]. The

Copyright © 2006 The Thomson Corporation

in-cites web site currently includes rankings of individual researchers up to the end of August 2005, according to papers published and cited during specific bimonthly updates.

2. Doctors of the decade

The January-February 2006 edition of *Science Watch* features a "Doctors of the decade" article"[5], looking at the most highly cited authors in Clinical Medicine from 1995 to 2005 (based on papers published and cited in Thomson-indexed journals of clinical medicine). Two epidemiologists from Harvard take the top slots with over 30,000 citations each. Indeed you have to drop to position 13 to find an author based outside North America — with only three of these making the top 20.

3. Most cited countries

SCI-BYTES provides a weekly research update based on our *Essential Science Indicators* resource for analysis of research performance and scientific trends. In March 2005 *SCI-BYTES* published a review of the top ten most cited countries[6] from 1994 to 2004, ranked according to total citations to published reports in 22 main fields. The United States led the way with 2,832,621 papers and 36,297,842 citations during this period — almost five times more than second-placed England.

4. Most prolific/highest impact journals

In April 2005, *SCI-BYTES* also took a look at the top ten most prolific journals[7] of the previous decade, ranking them by number of papers published between 1994 and 2004. The Journal of Biological Chemistry came out top with a grand total of 60,399 papers.

In October, *SCI-BYTES* identified the highest impact journals of 1995 - 2005[8] by ranking them in terms of the average citations per paper. This placed Cell on top, with an average of 161 citations per paper (from a total of 3,890 papers).

5. Countries with the most inventive activity

Patent documents published worldwide last year (i.e. all those with a publication year of 2005 appearing in *Derwent World Patents Index*® up to and including update 200579) when analyzed for *priority* applications by country (treating the original country of application as the priority) illustrate the predominance of Japan. The priority country is usually where the inventor is based, and we can see that for patents published in 2005 Japanese inventors filed more than twice as many as their US counterparts.

Copyright © 2006 The Thomson Corporation

Priority Country	Number of patents applied for
Japan	300,623
US	149,936
Germany	47,651
China	40,821
South Korea	32,521
Russia	17,384
France	11,394
UK	10,378
Taiwan	4,973
Italy	3,724

We will be able to update the volumes and relative positions of these countries during 2006 when we receive most of the 2005 published patents.

6. Technology areas with the most (and least) number of patent applications

Analysis of new basic patent applications in *Derwent World Patents Index* (*DWPI*SM), using data available in December 2005, shows us the top ten technology areas, with the percentage of documents on which these designations appeared:

Digital Computers	16.87%
Telephone and Data Transmission Systems	6.73%
Computer Peripherals	6.22%
Semiconductor Fabrication	6.18%
Electro(in)organic and Semiconductor Materials	6.07%
Broadcasting, radio and Line Transmission Systems	5.88%
Audio/Visual Recording and Systems	5.40%
Automotive Electronics	4.21%
Scientific Instrumentation	4.16%
Memories, Films, Hybrid Circuits, LCDs	3.82%

For comparison, here are the rarest technology classifications used in new *DWPI* data during 2005. Numbers shown are the total number of times the classification was applied (out of roughly 667,000 documents added by December 2005):

60	Firefighting
56	Anthracene
55	Ion Exchange Resins
40	Air Cushion Vehicles
8	Container Traffic

Copyright © 2006 The Thomson Corporation

7. New Manual codes reflect areas of technology growth

Manual codes are the hierarchical classification and indexing system used as an online retrieval tool for patents included in *DWPI*. Working with customers, the codes are revised annually as part of the ongoing development of *DWPI*, to ensure they mirror technological developments and thus enable precise technology searches. The latest revision is now complete, and the codes are live in the *DWPI* file:

In the *Electrical Patents Index* (*EPI*) it is perhaps no surprise to see a comparatively large number of new codes in the fast moving fields of Digital Computers (T01) and Data Recording (T03) – as reflected in the statistics reported above for total numbers of patents in these technology areas. For example new code T01-H01B3D has been introduced to enable finer subject matter retrieval when searching for flash memory technologies. Similarly, the addition of T03-B01E1M will enhance searches for mastering equipment for data recording.

The 2005 consultation process identified over 400 new *Chemical Patents Index* (*CPI*) manual codes. Areas showing particular growth include Natural Products or (Genetically engineered) Polymers (B04), Pharmaceutical Activities (B14), Agricultural Activities (C14) and Processes, Apparatus (B11). Some of the new codes within B14 will enable more precise searches for certain cancers, with codes being introduced for bladder cancers (B14-H01FS), larynx cancers (B14-H01K2), lung cancers (H01K3) and more.

Full details of the *DWPI* manual code revision are available at http://tinyurl.com/42r8m

8. Top-selling Engineering Standards?

According to Gary Smith, Vice President and General Manager at Techstreet, “Rebuilding and recovery brought forth a huge demand for building codes in 2005.” Leading the list was the American Society of Civil Engineers (ASCE) benchmark standard, ASCE 7-02, *Minimum Design Loads for Buildings and Other Structures*. This standard provides civil engineers with critical load data imposed by flood, wind, snow, rain, ice, and earthquakes.

Other top selling standards during 2005 were:

- The International Building Code
- International Residential Code
- National Electrical Code
- International Mechanical Code
- American Petroleum Institute API 650, the standard for safety and economy of design and fabrication of steel storage tanks for the petroleum industry
- ISO 14001, the de facto standard for environmental management systems

Copyright © 2006 The Thomson Corporation

- the new fifth edition of the best-selling AASHTO Green Book, the American Association of State and Highway Transportation Officials Policy on the Geometric Design of Highways and Streets.

To learn more about these and 250,000 other engineering codes and standards, visit www.techstreet.com, the one-stop source for engineers, librarians and technical professionals worldwide.

9. Measuring messaging: what do clinicians value most?

Knowing more about how clinicians interpret medical literature can help improve scientific communication efforts. The *Thomson Message Mapping System*SM evaluates knowledge in publicly available resources, from the point of view of the prescribing clinician. The results can then be used to assess the impact these messages will have on the attitudes and treatment habits of clinicians.

The study "Physician Appraisal of the Published Literature: Assessment of Clinical Relevance and Identification of Key Messages"[9] was presented at the Annual Conference for the Alliance of Continuing Medical Education in San Francisco, California January 2005. Factors influencing interpretation of medical literature by practicing physicians were found to be (in rank order):

- Quality of information presented
- How well key concepts are supported by data
- Quality of the journal
- Format of presentation
- Reputation of sponsor
- Reputation of investigators
- Commercial sponsorship

10. Pharmaceutical regulatory trends

In June 2005 we released findings of our 2005 Liquent Regulatory Affairs Trends Survey[10]. This widely reported annual survey provides insights and perspective into how regulatory departments use technology, and how they plan to harness technology in the future. Survey highlights included findings that:

- Of the 92% of respondents who make regulatory submissions, three-quarters (76%) said they will still be using both paper and electronic forms of submission in two years.

Copyright © 2006 The Thomson Corporation

- Only 2% of respondents were addressing the SAFE initiative - three-quarters (71%) didn't know whether or not they will implement the process.
- 70% of respondents use a document management system compared with only 50% in 2004
- Three-quarters (76%) of respondents planned to migrate to the eCTD, one-third (32%) planned to make this migration within 10 to 18 months.

12. The most popular KnowledgeLink newsletter articles

Readership of KnowledgeLink[SM], our e-mail newsletter[11], was boosted in 2005 by three immensely popular articles:

- ***Fifty years of citation indexing and analysis*** commemorated the 80th birthday of Eugene Garfield, pioneer in the field of bibliometrics, and founder of the Institute for Scientific Information (ISI) – now Thomson Scientific. The article looks back on his transforming contribution to research, and on his 1955 groundbreaking research that led to the creation of *Web of Science*®.
  http://scientific.thomson.com/news/newsletter/2005-08/8289803/

- ***Meeting information needs for drug development***, published in April 2005, reviews the customer consultation process leading up to the development of *Thomson Pharma*[SM], our web-based information solution for the pharmaceutical and biotechnology industry:
  http://scientific.thomson.com/news/newsletter/2005-04/8272913/
  A review of the first year of *Thomson Pharma*, published in October, has also proved popular with our readers:
  http://scientific.thomson.com/news/newsletter/2005-11/8298368/

- ***Nobel predictions: introducing the 2005 Thomson Scientific laureates*** was widely reported elsewhere in the media, bringing in thousands of readers during September 2005. The article applied data from *ISI Web of Knowledge*[SM] to quantitatively determine the most influential researchers in the Nobel categories of chemistry, economics, physiology or medicine, and physics. We were pleased to update the article in October with confirmation that one of our laureates — Robert H Grubbs — was awarded The Nobel Prize in Chemistry, together with Yves Chauvin and Richard R Shrock.
  http://scientific.thomson.com/news/newsletter/2005-08/8289814/

Copyright © 2006 The Thomson Corporation

Sources of additional information

1. http://scientific.thomson.com/products/sw-hp/
2. http://www.sciencewatch.com/sept-oct2004/
3. http://in-cites.com/
4. http://scientific.thomson.com/products/esi/
5. http://scientific.thomson.com/press/2006/8304095/
6. http://www.in-cites.com/research/2005/march_21_2005-1.html
7. http://www.in-cites.com/research/2005/april_11_2005-2.html
8. http://www.in-cites.com/research/2005/october_24_2005-2.html
9. http://scientific.thomson.com/news/newsletter/2005-10/8292460/
10. http://scientific.thomson.com/press/2005/8279736/
11. http://scientific.thomson.com/news/newsletter/

Copyright © 2006 The Thomson Corporation