



# International Patent Classification (IPC) reform - What has been and what will be the real impact?

Bob Stembridge  
Customer Relations Manager  
Thomson Scientific

- Background on IPC and the need for reform
- How IPC has been reformed
- How the reform impacts searchers
- Tracking emerging technologies
- Adequacy of classification systems in describing complex technologies
- Conclusions

## The International Patent Classification

- Internationally agreed classification system for patents administered by the World Intellectual Property Organisation (WIPO)
- 30+ years old, the latest edition comprises around 70,000 classes
- Covers all technology
- Uses:
  - **Search** - Primary purpose is to provide a tool for patent offices and other users to retrieve prior art to determine novelty & inventiveness
  - **Alert** - Also used for selective dissemination
  - **Analysis** - Also used for IP statistics to assess technology development, country trends, competitive intelligence etc.

## IPC Reform

- Why?
  - Allow for more detailed classification of greater volumes
  - Simplify use & reduce burden for smaller patent offices
  - Keep pace with rapidly changing technology
- What?
  - Two tier system – Core and Advanced
  - Core revised every 3 yrs, Advanced every 3 months
  - Allow for the possibility of searching using only the current version of the IPC – backfile reclassification of newly created Master Classification Database (MCD).
  - Modified classification philosophy (new categories of invention and additional information)
- When?
  - Live from Jan 1st 2006

## Jim Calvert, Senior Examiner UK Patent Office, Dec 1998

### Goal and Objective

- A single harmonised patent classification system consistently and completely applied by all Patent Offices
- A classification scheme that is easy to use, is comprehensive, and can react quickly to changes in technology

2

## Achievements against objectives

- Single, harmonised system
  - Single system with two levels
- Consistently and completely applied
  - More detailed instructions for applying with examples
- Easy to use
  - Improved guidance
  - Additional definitions
  - Backfile re-classification
- Comprehensive
  - 70,000 Advanced codes
- Reacts quickly to changes in technology
  - Rapid revision cycles - 3 year core/3 month advanced

## Impact on searchers

- Search
  - A continuously updated system that can be used to search the whole patent collection through the advanced level
- Alert
  - A stable system that can be used for broader queries through the core level
- Analysis
  - A more consistent system that can be used to produce statistics with a common key

## Impacts on searching

- Back file reclassification
  - Need only use one classification for complete retrieval back to 1975
- Two levels
  - Need to use modified strategy
  - **G02C 5/18**            Spectacles with reinforced side-members
    - Advanced code**
    - Valid since IPC<sup>1</sup>
    - Subset of G02C 5/14 - Spectacles, side-members (Core code)
  - Published before 1st Jan 2006
    - complete retrieval using G02C 5/18 (code was valid IPC<sup>1-7</sup>)
  - Published after 1st Jan 2006
    - complete retrieval from all advanced authorities (advanced code)
    - for core authorities, use core code (G02C 5/14) and eliminate those already retrieved with advanced code (autoposted to core)



# Advanced

http://www.delphion.com - Work File: G02C 005/18 Advanced - Microsoft Internet Explorer

Work File: G02C 005/18 Advanced [help](#)

Displaying results 1 - 20 of 98

98 matches found

<< First

<input type="checkbox"/>	<a href="#">FR2883079A1</a>	Eye the sliding reducing device for e.g. sports activities, has metallic ballast fastened on terminals of s behind pivot which forms upper part of pinna of ears, or placed inside fixed/interchangeable ive <a href="#">[Derwent Record]</a>		2006-04-05	2002
<input type="checkbox"/>	<a href="#">CO150729A1</a>	End RE DES PAVILLONS DES OREILLES, LIMITANT LE GLISSEMENT E lass frame and eyeglasses		2004-11-17	2002
<input checked="" type="checkbox"/>	<a href="#">CN1249486C</a>	End lass frame and eyeglasses	Co.,	2003-07-29	2002
<input checked="" type="checkbox"/>	<a href="#">EP1302806A2</a>	End piece, temple with end piece, unit for eyeglass frame and eyeglasses End piece for eyeglass frame, has metal core embedded in hard plastic substrate covered by cover made from shape memory plastic having glass transition temperature ranging from 20 to 40 degrees centigrade <a href="#">[Derwent Record]</a>		2003-04-16	2002
<input checked="" type="checkbox"/>	<a href="#">JP2003098485A2</a>	End piece, temple with end piece, unit for eyeglass frame and eyeglasses Manufacturing method for resin arms of spectacle frame, involves twisting square bar at 90 degree, 180 degree, or suitable angle, and pressing in metal core to center axial portion of twisted bar <a href="#">[Derwent Record]</a>			
<input checked="" type="checkbox"/>	<a href="#">CN1400485A</a>	TEMPLE AND EAR BEND MADE OF RESIN OF SPECTACLE FRAME AND METHOD OF MANUFACTURING THE SAME End piece for eyeglass frame, has metal core embedded in hard plastic substrate covered by cover made from shape memory plastic having glass transition temperature ranging from 20 to 40 degrees centigrade <a href="#">[Derwent Record]</a>			
<input checked="" type="checkbox"/>	<a href="#">JP2003043426A2</a>	End piece, earpiece with the end piece, eye-glass unit and eye glasses End piece for eyeglass frame, has metal core embedded in hard plastic substrate covered by cover made from, shape memory plastic having glass transition temperature ranging from 20 to 40 degrees centigrade <a href="#">[Derwent Record]</a>	LTD	2003-04-03	2002

# Core

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> [Last Page](#) >>

**3,042 matches found**

PDF	Publication	Derwent Title <small>(To sort a column, click label at top)</small>	Assignee	Pub. Date	Filed
<input type="checkbox"/>	<a href="#">US7118210</a>	Eye covers		2006-10-10	2005-11-22
<input type="checkbox"/>	<a href="#">US20060221299A1</a>	ANGLE ADJUSTMENT MECHANISM FOR EYEGLASS TEMPLES		2006-10-05	2005-04-01
<input checked="" type="checkbox"/>	<a href="#">DE102005014512A1</a>	Brillenfassung	Rodenstock GmbH	2006-10-05	2005-03-30
<input checked="" type="checkbox"/>	<a href="#">DE102004023806B4</a>	Spectacles frame has snap ratchet mountings for the side arms, at the lens frames, for fitting and removal for a rapid lens exchange <a href="#">[Derwent Record]</a>	ic! berlin brillenproduktions GmbH	2006-10-05	2004-05-13
<input checked="" type="checkbox"/>	<a href="#">CN2824084Y</a>	Brillengestell		2006-10-04	2005-11-03
<input type="checkbox"/>	<a href="#">US7109379</a>	Eyeglasses assembly for modern people, has elastic unit provided with hooks, where elastic unit is made of	High Design Ent.	2006-09-19	2004-12-22
			ER	2006-09-15	2005-03-14
				2006-09-14	2005-03-04
				2006-09-13	2001-03-21
<input type="checkbox"/>	<a href="#">US7104646</a>	Exchange: Eyeglass, has two opposite temple-connecting parts with two engaging components that are formed with two teeth, respectively, where one of components is resilient so as to slightly deform in radial directions relative to axis <a href="#">[Derwent Record]</a>	All-Logic Int. Co., Ltd.	2006-09-12	2005-06-14
<input checked="" type="checkbox"/>	<a href="#">FR2882826A1</a>	Exchange: Spectacles' frame side and branches connecting device, has branch lug, for each branch, attached to side and comprising rotation axle to which hinge is tied down, where branch is attached to lug by hinge <a href="#">[Derwent Record]</a>	BLEIVAS GEORGES	2006-09-08	2005-03-03

(19) RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE

PARIS

(11) N° de publication : **2 883 079**

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**07 07480**

(51) Int Cl<sup>8</sup> : G 02 C 5/18 (2006.01)

# Core not Advanced, Core authority

http://www.delphion.com - Work File: Core not Advanced - Microsoft Internet Explorer

PDF	Publication	Derwent Title	Assignee	Pub. Date	Filed
<input type="checkbox"/>	<a href="#">US7118210</a>	Eye covers		2006-10-10	2005-11-22
<input type="checkbox"/>	<a href="#">US20060221299A1</a>	ANGLE ADJUSTMENT MECHANISM FOR EYEGLASS TEMPLES		2006-10-05	2005-04-01
<input checked="" type="checkbox"/>	<a href="#">DE102005014512A1</a>	Brillenfassung	Rodenstock GmbH	2006-10-05	2005-03-30
<input checked="" type="checkbox"/>	<a href="#">DE102004023806B4</a>	Spectacles frame has snap ratchet mountings for the side arms, at the lens frames, for fitting and removal for a rapid lens exchange [Derwent Record]	ic! berlin brillenproduktions	2006-10-05	2004-05-13



**REPUBLIKA SLOVENIJA**  
**Urad RS za intelektualno lastnino**

(10) **SI/EP 1297378 T**

**PREVOD ZAHTEVKOV  
 EVROPSKEGA PATENTA**

Številka predmeta: **200130548**

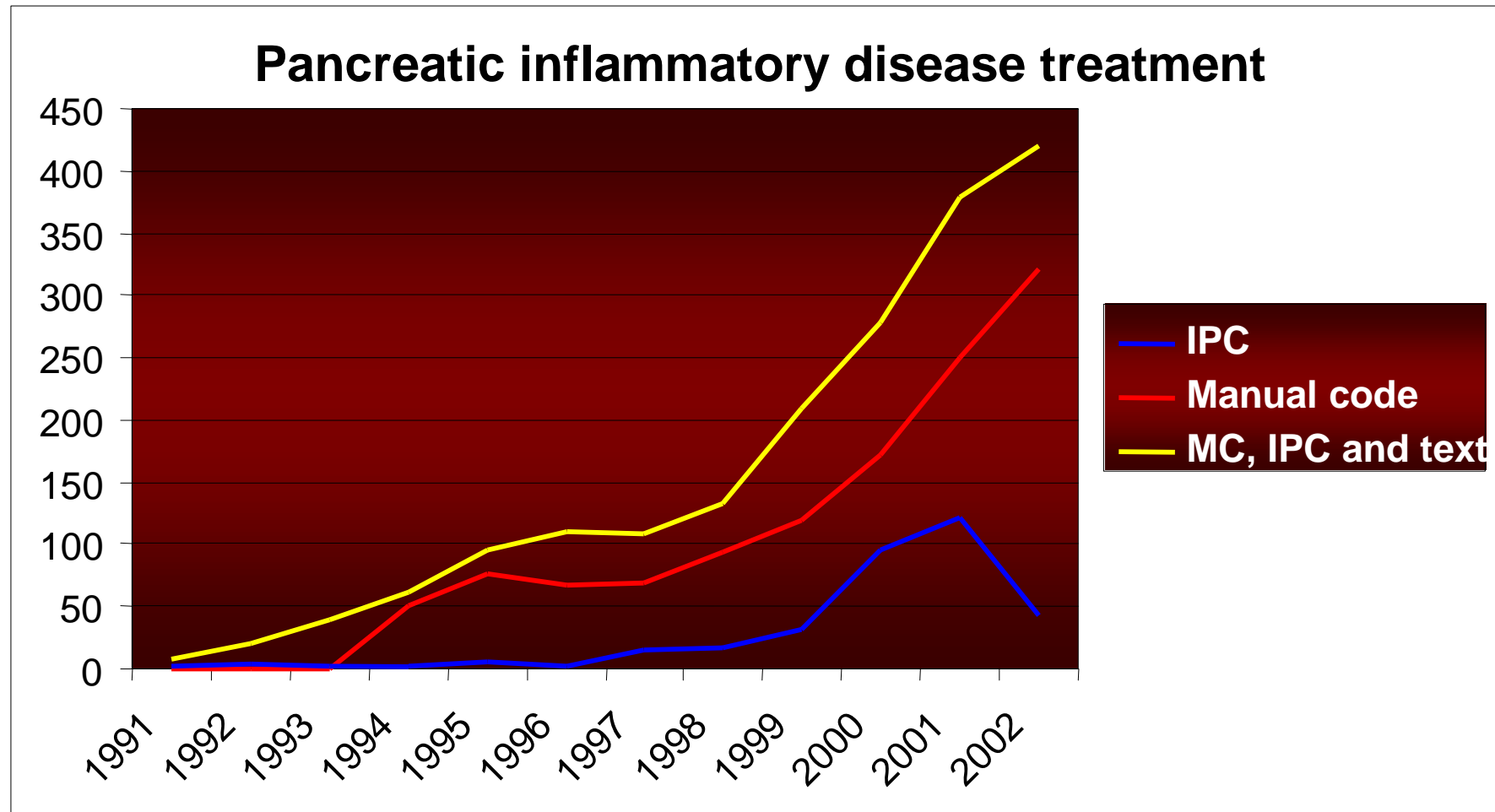
(51) Int. Cl. (2006)

Datum prijave: **05.04.2001**

**G02C 5/14**

**102006227554A2** [Derwent Record]

## Using classification to track emerging technology



## Using classification to track emerging technology

- C40B                      Combinatorial chemistry; Libraries  
Valid IPC<sup>2006.01</sup>
- Published after 1st Jan 2006 - complete retrieval of all advanced and core level documents
- Published before 1st Jan 2006 - retrieval of all documents re-classified in C40B through machine concordance against different national collections (ECLA, DE, JP, RU) which have been re-classified through time



# Emergence of combinatorial library technology

## Snapshot

**Result Set for Query: ( (C40B) <in> IC)** [sample](#) [pricing](#) [help](#)

<b>Summarize by:</b> Default (set of 4) ▲ Assignee Assignee City Assignee State Assignee Country Designated Country Application Year ▼	<b>Sort by:</b> <input checked="" type="radio"/> Item count <input type="radio"/> Field values	<b>Display Results:</b> <input checked="" type="radio"/> Single column <input type="radio"/> Double column	<b>Display Parameters:</b> 1 Min Item Count 10 Max Rows Shown	<b>To use this tool:</b> 1. Refine by changing field selections or sort and display options 2. Select items in bar charts to limit new summary 3. Click SUMMARIZE to generate new Snapshot 4. Click View documents for list view of selected documents
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**Summarize**

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<u>Select</u>	Publication Year	Items	%	Bar Chart
<input type="checkbox"/>	2006	362	81.7%	<div style="width: 81.7%; height: 10px; background-color: #4a7ebb;"></div>
<input type="checkbox"/>	2005	56	12.6%	<div style="width: 12.6%; height: 10px; background-color: #4a7ebb;"></div>
<input type="checkbox"/>	2004	21	4.7%	<div style="width: 4.7%; height: 10px; background-color: #4a7ebb;"></div>
<input type="checkbox"/>	2003	2	0.4%	<div style="width: 0.4%; height: 10px; background-color: #4a7ebb;"></div>
<input type="checkbox"/>	2001	1	0.2%	<div style="width: 0.2%; height: 10px; background-color: #4a7ebb;"></div>
<input type="checkbox"/>	1997	1	0.2%	<div style="width: 0.2%; height: 10px; background-color: #4a7ebb;"></div>

6 rows shown

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# (combinatorial chemistry) and librar\*

## Snapshot

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 Inventor Country  
 IPC-R Code - 4 digit  
 IPC-R Code - full  
 IPC 1-7 Code - 4 digit  
 IPC 1-7 Code - full  
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Select	Publication Year	Items	%	Bar Chart
<input type="checkbox"/>	2006	57	9.6 %	
<input type="checkbox"/>	2005	60	10.2 %	
<input type="checkbox"/>	2004	73	12.4 %	
<input type="checkbox"/>	2003	89	15.1 %	
<input type="checkbox"/>	2002	90	15.2 %	
<input type="checkbox"/>	2001	73	12.4 %	
<input type="checkbox"/>	2000	58	9.8 %	
<input type="checkbox"/>	1999	31	5.2 %	
<input type="checkbox"/>	1998	33	5.5 %	
<input type="checkbox"/>	1997	19	3.2 %	
10 rows shown				
	(Below cutoff)	8	1.35 %	

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## IPCs for (combinatorial chemistry) and librar\*

Snapshot

**Result Set for Query: ((combinatorial chemistry) and librar\*)** [sample](#) [pricing](#) [help](#)

<b>Summarize by:</b> Default (set of 4) Assignee Assignee City Assignee State Assignee Country Designated Country Application Year	<b>Sort by:</b> <input checked="" type="radio"/> Item count <input type="radio"/> Field values	<b>Display Results:</b> <input checked="" type="radio"/> Single column <input type="radio"/> Double column	<b>Display Parameters:</b> 2 Min Item Count 10 Max Rows Shown	<b>To use this tool:</b> 1. Refine by changing field selections or sort and display options 2. Select items in bar charts to limit new summary 3. Click SUMMARIZE to generate new Snapshot 4. Click View documents for list view of selected documents
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<u>Select</u>	IPC-R Code- 4 digit	Items	%	Bar Chart
<input type="checkbox"/>	G01N G — Physics; Measuring (counting G06M;	224	15.0%	<div style="width: 15.0%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C07B C — Chemistry; Metallurgy; Organic Chemistry	167	11.2%	<div style="width: 11.2%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C07K C — Chemistry; Metallurgy; Organic Chemistry	156	10.4%	<div style="width: 10.4%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	B01J B — Performing Operations; Transporting; Physical or CH	149	9.9%	<div style="width: 9.9%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C12Q C — Chemistry; Metallurgy; Biochemistry;	94	6.2%	<div style="width: 6.2%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C07D C — Chemistry; Metallurgy; Organic Chemistry	85	5.6%	<div style="width: 5.6%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	A61K A — Human Necessities; Medical or Veterinary Science; H	81	5.4%	<div style="width: 5.4%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C07H C — Chemistry; Metallurgy; Organic Chemistry	69	4.6%	<div style="width: 4.6%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	C12N C — Chemistry; Metallurgy; Biochemistry;	67	4.4%	<div style="width: 4.4%; height: 10px; background-color: #4F81BD;"></div>
<input type="checkbox"/>	B01L B — Performing Operations; Transporting; Physical or CH	45	3.0%	<div style="width: 3.0%; height: 10px; background-color: #4F81BD;"></div>
10 rows shown		(Below cutoff)	358	23.9 ...

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# US7122323 classified in G01N

Apparatus and method for synthesizing combinatorial libraries (US7122323) - Microsoft Internet Explorer

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Title: **US7122323: Apparatus and method for synthesizing combinatorial libraries**

Country: US United States of America

Inventor: **Patek, Marcel**; Tucson, AZ, United States of America  
**Pavel, Safar**; Tucson, AZ, United States of America  
**Smrcina, Martin**; Tucson, AZ, United States of America  
**Wegrzyniak, Eric**; Tucson, AZ, United States of America  
**Strop, Peter**; Tucson, AZ, United States of America  
**Flynn, Gary A**; Tucson, AZ, United States of America  
**Baum, Stephen A**; Tucson, AZ, United States of America

Assignee: **Aventis Pharmaceuticals Inc.**, Bridgewater, NJ, United States of America  
 other patents from [AVENTIS PHARMACEUTICALS INC. \(766582\)](#) (approx. 67)  
[News, Profiles, Stocks and More about this company](#)

Published / Filed: 2006-10-17 / 2002-12-11

Application Number: **US2002000316353**

IPC Code: Advanced: [C12M 1/40](#); [G01N 33/53](#); [G01N 30/02](#); [G01N 33/543](#);  
 Core: [G01N 30/00](#); Also in Advanced: [C12M 1/40](#); [G01N 33/53](#); [G01N 33/543](#);

U.S. Class: [435/007.1](#); [435/004](#); [435/006](#); [435/287.8](#); [435/288.2](#); [435/288.4](#); [435/DIG.40](#); [435/DIG.43](#); [435/DIG.44](#); [435/DIG.45](#); [436/161](#); [436/173](#); [436/518](#); [436/528](#); [436/531](#);

Field of Search: [435/7.1](#),DIG. 43,4,6,287.8,288.2,288.4,DIG. 40,DIG. 44,DIG. 45 [436/161](#),173,518,528,531

Priority Number: 2002-12-11 **US2002000316353**

Abstract: An apparatus and method for synthesizing a combinatorial library comprising a plurality of chemical compounds such that the chemical composition of each compound is easily tracked. The library compounds are synthesized on solid-phase supports, which are spatially arranged in frames during synthesis according to a

High Resolution  
 Low Resolution  
 23 pages

## C40B COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES, IN SILICO LIBRARIES [8]

Note(s)

In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place. When classifying in this subclass, subject matter of interest is **also classified in other appropriate places**:

library members are also classified in the appropriate places elsewhere in the IPC (e.g. in section C) according to established procedure relating to "Markush"-type formulae (see paragraphs 100 and 101 of the Guide); [8]

**methods or apparatus** covered by this subclass **are also classified** for their biological, chemical, physical or other features in the appropriate places in the IPC, if such features are of interest, e.g. [8] G01N  
Chemical or physical analysis [8]

# US7122323 classified in G01N

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Title: **US7122323: Apparatus and method for synthesizing combinatorial libraries**

Country: US United States of America

Inventor: **Patek, Marcel**; Tucson, AZ, United States of America  
**Pavel, Safar**; Tucson, AZ, United States of America  
**Smrcina, Martin**; Tucson, AZ, United States of America  
**Wegrzyniak, Eric**; Tucson, AZ, United States of America  
**Strop, Peter**; Tucson, AZ, United States of America  
**Flynn, Gary A**; Tucson, AZ, United States of America  
**Baum, Stephen A**; Tucson, AZ, United States of America

Assignee: **Aventis Pharmaceuticals Inc.**, Bridgewater, NJ, United States of America  
 other patents from [AVENTIS PHARMACEUTICALS INC. \(766582\)](#) (approx. 67)  
[News, Profiles, Stocks and More about this company](#)

Published / Filed: 2006-10-17 / 2002-12-11

Application Number: **US2002000316353**

IPC Code: Advanced: [C12M 1/40](#); [G01N 33/53](#); [G01N 30/02](#); [G01N 33/543](#);  
 Core: [G01N 30/00](#); Also in Advanced: [C12M 1/40](#); [G01N 33/53](#); [G01N 33/543](#);

U.S. Class: [435/007.1](#); [435/004](#); [435/006](#); [435/287.8](#); [435/288.2](#); [435/288.4](#); [435/DIG.40](#); [435/DIG.43](#); [435/DIG.44](#); [435/DIG.45](#); [436/161](#); [436/173](#); [436/518](#); [436/528](#); [436/531](#);

Field of Search: [435/7.1](#),DIG. 43,4,6,287.8,288.2,288.4,DIG. 40,DIG. 44,DIG. 45 [436/161](#),173,518,528,531

Priority Number: 2002-12-11 **US2002000316353**

Abstract: An apparatus and method for synthesizing a combinatorial library comprising a plurality of chemical compounds such that the chemical composition of each compound is easily tracked. The library compounds are synthesized on solid-phase supports, which are spatially arranged in frames during synthesis according to a

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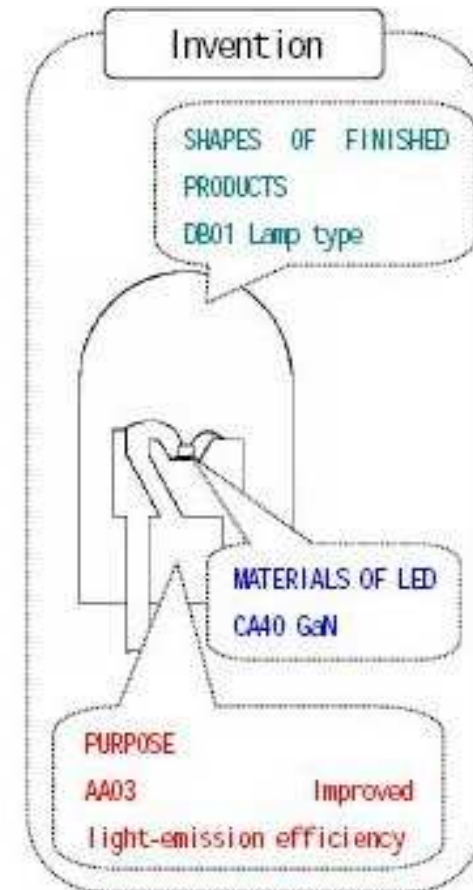
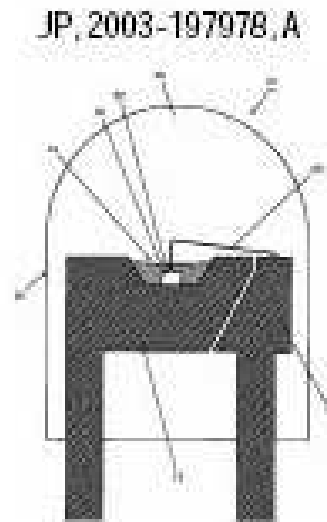
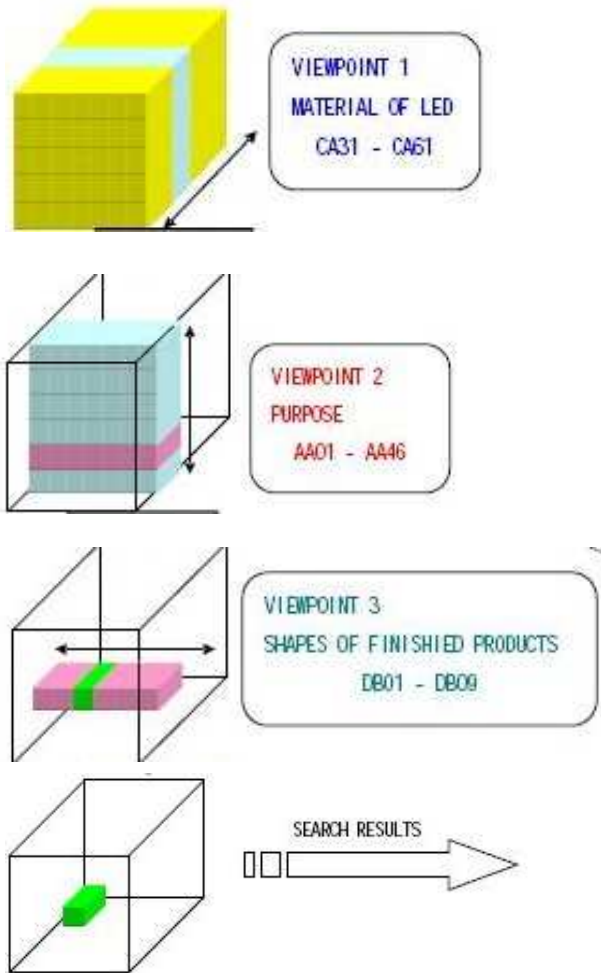
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23 pages

## Adequacy of classification systems

- Agreement between classifier and searcher?
- High precision with high recall?
- Hierarchical vs thematic
  - IPC, ECLA
  - Derwent Manual Codes
  - Japanese F-terms
  - API thesaurus

# Japanese F-terms





Clustering - Microsoft Internet Explorer

11 chemical, library, synthesis, compound, unique, determine, synthesize, series, apparatus, combinatorial

**Cluster Content** View as

Publication	Similarity	Title
<a href="#">US06541211</a>	43%	Apparatus and method for synthesizing combinatorial libraries
<a href="#">US07122323</a>	42%	Apparatus and method for synthesizing combinatorial libraries
<a href="#">US06368874</a>	30%	Methods for hard-tagging an encoded synthetic library
<a href="#">US06872535</a>	29%	Three-dimensional array of supports for solid-phase parallel synthesis and method of use
<a href="#">US22098598A1</a>	28%	Method for tracking compounds in solution phase combinatorial chemistry
<a href="#">US06753449</a>	28%	Cleavable linker for solid phase synthesis
<a href="#">US06377895</a>	28%	Method for planning the generation of combinatorial chemistry libraries method for planning the generation of combinatorial chemistry libraries
<a href="#">US23180804A1</a>	28%	Solid phase synthesis of chemical libraries
<a href="#">US06653087</a>	26%	Convergent synthesis of combinatorial library
<a href="#">US07083914</a>	25%	Color-encoding and in-situ interrogation of matrix-coupled chemical compounds

Visual Clustering Map - Microsoft Internet Explorer

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## Conclusions

- IPC reform has addressed some shortcomings of the old system
  - Better consistency – more guidance in applying
  - Easier to use – only one version with back file reclassification
  - Keeping better pace with technology developments
- For comprehensive retrieval, use of core and/or advanced by different offices introduces a new layer of complexity
- Does this reform truly address the ability to adapt as the technology develops?





**Thank you!**