



Patent Classification

Overview and tools

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Abuja
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Overview

- Why classification?
- What are some advantages/disadvantages of patent classification?
- Which types of patent classification exist?
- How does patent classification work?
- How can appropriate classifications be identified?

Scenario



- You go to a library to do research on ancient architecture in Egypt and Sudan.
- How would you find books on this topic?

Scenario

- You could search for books with words like "ancient" or "architecture"
- Which problems might you face if you take this approach?
 - Synonyms and related terms ("primitive building techniques")
 - Technical jargon ("pre-2nd dynasty morphogenesis")
 - Obfuscation ("painters and builders of the Nile")
 - Language barriers ("arquitectura antigua")

Scenario

■ How could you solve these problems?

→ Library classification systems (e.g. Dewey Decimal System)

000 – General works, Computer science and Information

100 – Philosophy and psychology

200 – Religion

300 – Social sciences

400 – Language

500 – Pure Science

600 – Technology

700 – Arts & recreation

800 – Literature

900 – History & geography

Scenario



Dewey Decimal System

- 722 → Architecture to ca. 300
- 962 → Egypt and Sudan

Scenario



- You are searching a patent collection for documents on Portland cement.
- How would you find relevant documents?

Patent classification



International Patent Classification

■ C04B 7/02 → Portland cement

Advantages of classification vs. keywords

- Terminology and jargon independent (including changes in terms used over time)
- Language independent

→ A more complete and precise search

Disadvantages of patent classification vs. keywords

- May not be available for all areas of technology
- May not be specific enough for a particular search
- May not be available for all documents
- Potentially complex

Major patent classification systems

- International Patent Classification (IPC)
- Cooperative Patent Classification (CPC)
- Japanese Patent Classification (FI/F-terms)
- European Patent Classification (ECLA) and the US Patent Classification (USPC)
→ replaced by CPC from 01.01.2013

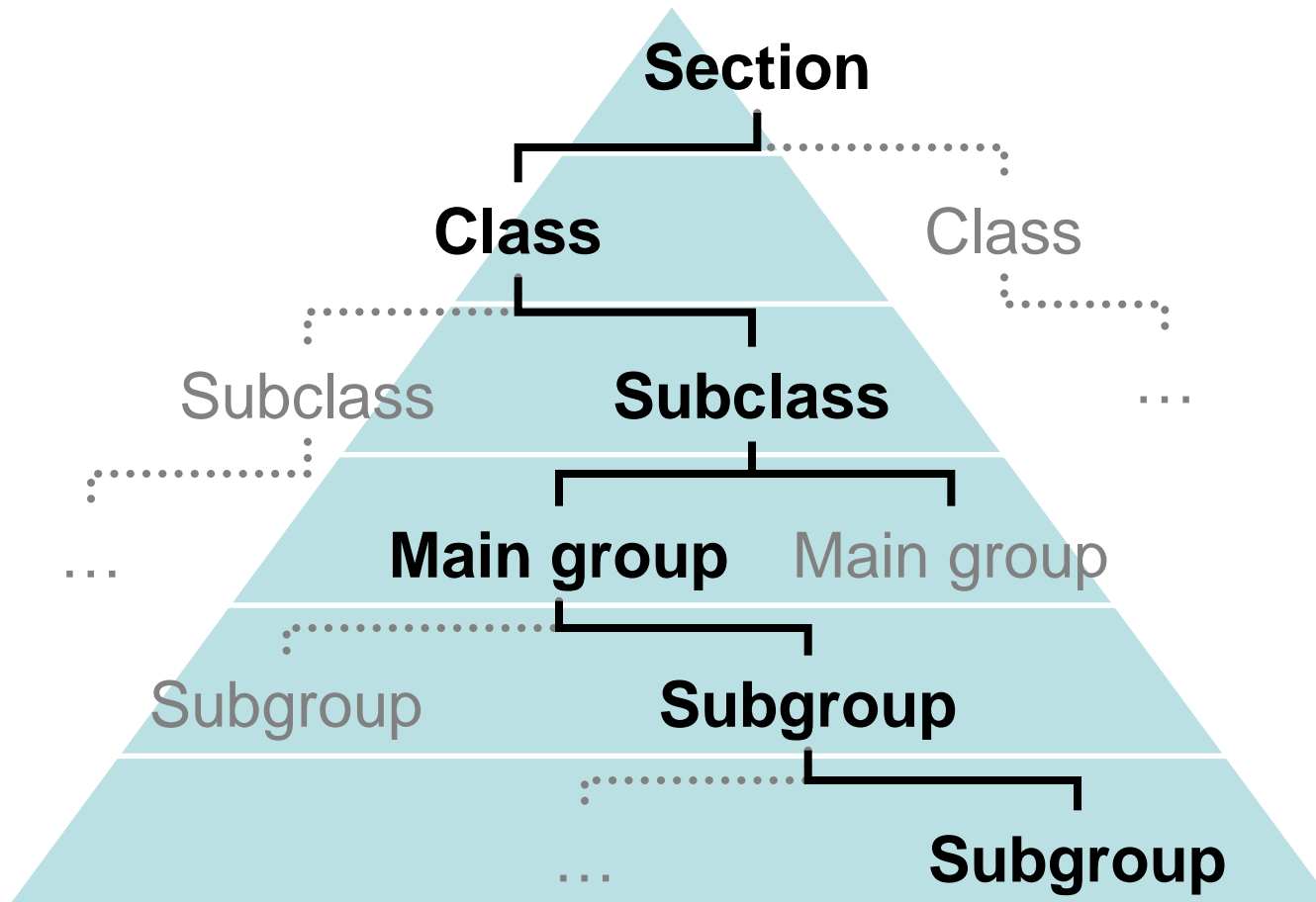
Difference between classification systems

	Language availability	Number of entries	
IPC	English and French (w/ national versions)	~70'000	
CPC	English only	~250'000	Based on IPC
FI/F-terms	English and Japanese	~190'000	Based on IPC

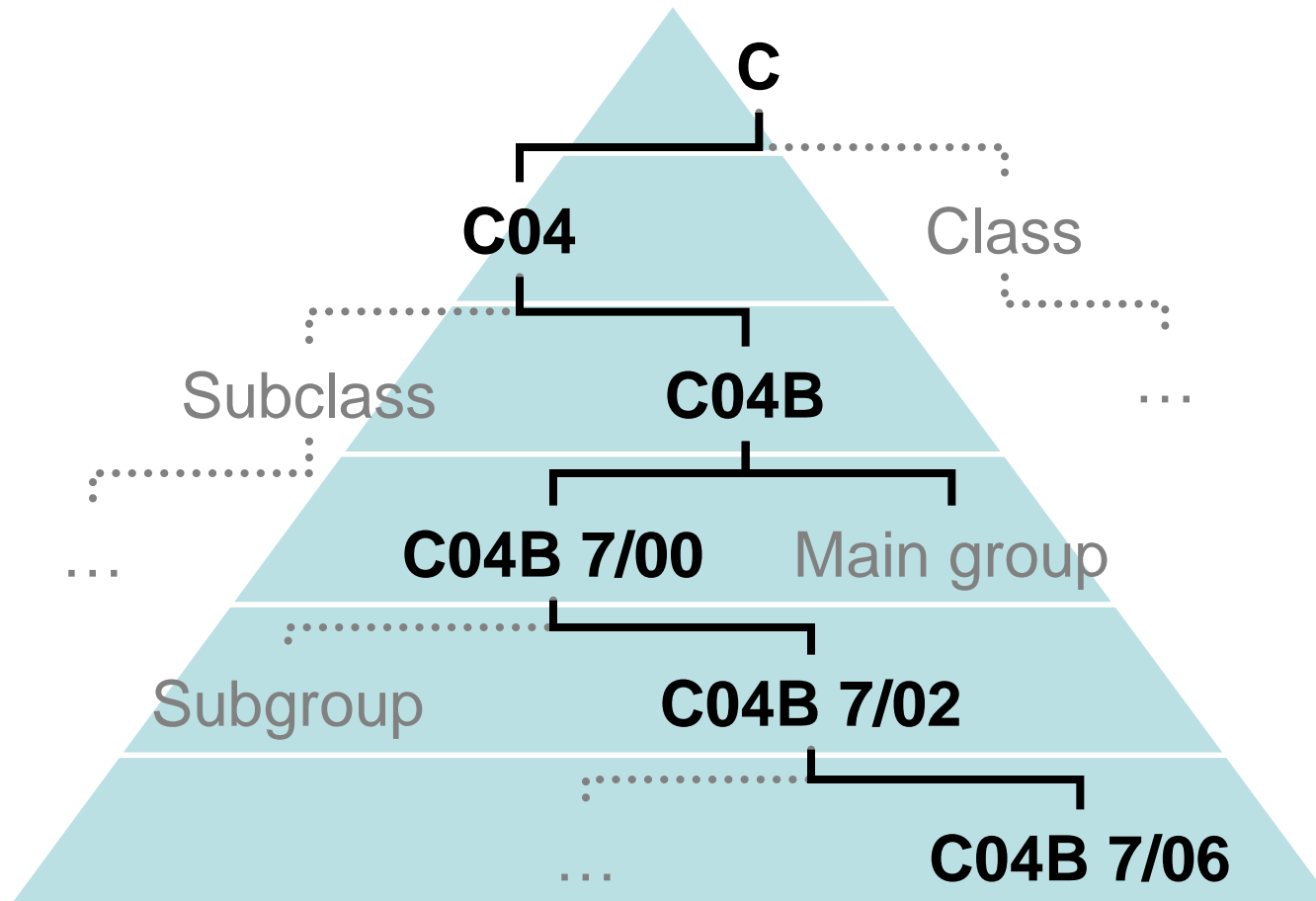
IPC: Structure

- Hierarchical
 - Section
 - Class
 - Subclass
 - Main group
 - Subgroup

IPC: Structure



IPC: Structure



IPC: Structure

- C → Chemistry
- C04 → Cements; concrete; artificial stone; ceramics; refractories
- C04B → Lime; magnesia; slag; cements; compositions thereof...; artificial stone; ceramics; refractories; treatment of natural stone
- C04B 7/00 → Hydraulic cements
- C04B 7/02 → Portland cement
- C04B 7/06 → using alkaline raw materials

IPC: Structure (subgroups)

C04B 7/00	Hydraulic cements
C04B 7/02	• Portland cement
C04B 7/04	•• using raw materials containing gypsum
C04B 7/06	•• using alkaline raw materials
C04B 7/12	• Natural pozzuolanas; Natural pozzuolana cements [4]
C04B 7/13	•• Mixtures thereof with inorganic cementitious materials, e.g. Portland cements [4]
C04B 7/14	• Cements containing slag
C04B 7/147	•• Metallurgical slag [4]
C04B 7/153	••• Mixtures thereof with other inorganic cementitious materials or other activators [4]
C04B 7/17	•••• with calcium oxide containing activators [4]
C04B 7/19	••••• Portland cements [4]
C04B 7/21	•••• with calcium sulfate containing activators [4]
C04B 7/22	• Iron ore cements
C04B 7/24	• Cements from oil shales, residues or waste other than slag [4]
C04B 7/26	•• from raw materials containing flue dust
C04B 7/28	•• from combustion residues (C04B 7/26 takes precedence) [4]

→ More dots = lower hierarchical level

IPC: Structure (subgroups)

C04B 7/00	Hydraulic cements
C04B 7/02	• Portland cement
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IPC: Structure (notes and references)

A23 **FOODS OR FOODSTUFFS; THEIR TREATMENT, NOT COVERED BY OTHER CLASSES**

Note(s)

Attention is drawn to the following places:

- C08B** Polysaccharides, derivatives thereof
- C11** Animal or vegetable oils, fats, fatty substances or waxes
- C12** Biochemistry, beer, spirits, wine, vinegar
- C13** Sugar industry.

A23B **PRESERVING, e.g. BY CANNING, MEAT, FISH, EGGS, FRUIT, VEGETABLES, EDIBLE SEEDS; CHEMICAL RIPENING OF FRUIT OR VEGETABLES; THE PRESERVED, RIPENED, OR CANNED PRODUCTS** (preserving foodstuffs in general **A23L 3/00**; applying food preservatives in packages **B65D 81/28**)

A23C **DAIRY PRODUCTS, e.g. MILK, BUTTER, CHEESE; MILK OR CHEESE SUBSTITUTES; MAKING THEREOF** (obtaining protein compositions for foodstuffs **A23J 1/00**; **preparation** of peptides, e.g. of proteins, in general **C07K 1/00**)

Note(s)

This subclass covers:

- the chemical **aspects** of making dairy **products**; [3]
- the **apparatus** used for performing techniques provided for therein, e.g. for concentration, evaporation, drying, preservation, or sterilisation, unless such **apparatus** is specifically provided for in another subclass, e.g. **A01J** for **treatment** of milk or cream for manufacture of butter or cheese. [3]

→ Relevant symbols, definitions

Scenario

- You have been requested to retrieve patent documents related to semiconductor lasers and have decided to use IPC classification for this purpose.



Photo source: NASA

Tools for identifying relevant classification

- Terms
 - Catchwords
 - Definitions
 - Scheme
- STATS
- IPCCAT

IPC Official Publication

WIPO IP SERVICES International Patent Classification (IPC) Official Publication

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WORLD INTELLECTUAL PROPERTY ORGANIZATION

IPC Home Page - Help

Version: 2014.01
Current symbol:
Go to:

Language:
 English
 French
 English/French

View mode:
 path
 full
 hierarchic

Show CPC/FI
 Deleted entries
 Subclass indexes
 Guidance Headings
 Notes

Search:

Assistance:

Scheme RCL Compilation Catchwords Guide to the IPC

<input type="checkbox"/>	A	SECTION A — HUMAN NECESSITIES
<input type="checkbox"/>	B	SECTION B — PERFORMING OPERATIONS; TRANSPORTING
<input type="checkbox"/>	C	SECTION C — CHEMISTRY; METALLURGY
<input type="checkbox"/>	D	SECTION D — TEXTILES; PAPER
<input type="checkbox"/>	E	SECTION E — FIXED CONSTRUCTIONS
<input type="checkbox"/>	F	SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
<input type="checkbox"/>	G	SECTION G — PHYSICS
<input type="checkbox"/>	H	SECTION H — ELECTRICITY

IPC Terms

IPC Terms search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

Scheme Path Definition Catchwords

<input checked="" type="checkbox"/> Scheme	<input type="checkbox"/> Path	<input checked="" type="checkbox"/> Definition	<input checked="" type="checkbox"/> Catchwords

IPC Terms

IPC Terms search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

Scheme Path

Definition

Catchwords

G02B 6/43
H01L 29/15
H01L 33/00
H01L 51/50
H01S
H01S 3/00
H01S 3/0941
H01S 3/23
H01S 5/00
H01S 5/40
H03F

11

C23F
F21K
G01J
G02F 2/00
G11B
G11B 7/126
G11B 7/127
H01L
H01S
H04B 10/00

10

LIGHT
SEMICONDUCTOR(S)

2

Display results

IPC Catchwords

Scheme RCL Compilation **Catchwords** Guide to the IPC

SEMICONDUCTOR(S)

- cutting or working SEMICONDUCTOR(S) material B28D 5/00
- manufacture or treatment of SEMICONDUCTOR(S) devices H01L 21/00
- materials for SEMICONDUCTOR(S) C30B
- resistors formed from SEMICONDUCTOR(S) material H01C
- selection of magnetic SEMICONDUCTOR(S) material H01F 1/40
- SEMICONDUCTOR(S) devices having at least one potential barrier H01L
- SEMICONDUCTOR(S) devices using field-effect H01L 29/76
- SEMICONDUCTOR(S) DRAM devices H01L 27/108
- SEMICONDUCTOR(S) integrated circuits H01L 27/00
- SEMICONDUCTOR(S) laser H01S 5/00
- SEMICONDUCTOR(S) materials used in thermoelectric devices H01L
- SEMICONDUCTOR(S) ROM devices H01L 27/112
- SEMICONDUCTOR(S) SRAM devices H01L 27/11
- testing SEMICONDUCTOR(S) devices G01R 31/26

SENSING

- SENSING record carriers in data processing apparatus G06K 7/00
- SENSING of variables
- see catchwords for variables sensed

IPC Catchword → Scheme

Scheme	RCL	Compilation	Catchwords	Guide to the IPC
	H01S 5/00	Semiconductor lasers [7]		
		Note(s)		
		Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers. In this group, the Periodic System used is the 8 group system indicated by Roman numerals in the Periodic Table thereunder. [2010.01]		
	H01S 5/02	• Structural details or components not essential to laser action [7]		
	H01S 5/022	•• Mountings; Housings [7]		
	H01S 5/024	•• Cooling arrangements [7]		
	H01S 5/026	•• Monolithically integrated components, e.g. waveguides, monitoring photo-detectors or drivers (stabilisation of output H01S 5/06) [7]		
	H01S 5/028	•• Coatings [7]		
	H01S 5/04	• Processes or apparatus for excitation, e.g. pumping (H01S 5/06 takes precedence) [7]		
	H01S 5/042	•• Electrical excitation [7]		
	H01S 5/06	• Arrangements for controlling the laser output parameters, e.g. by operating on the active medium [7]		
	H01S 5/062	•• by varying the potential of the electrodes (H01S 5/065 takes precedence) [7]		
	H01S 5/0625	••• in multi-section lasers [7]		
	H01S 5/065	•• Mode locking; Mode suppression; Mode selection [7]		
	H01S 5/068	•• Stabilisation of laser output parameters (H01S 5/0625 takes precedence) [7]		
	H01S 5/0683	••• by monitoring the optical output parameters [7]		
	H01S 5/0687	•••• Stabilising the frequency of the laser [7]		
	H01S 5/10	• Construction or shape of the optical resonator [7]		

IPC Terms

IPC Terms search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

Scheme Path

Definition

Catchwords

G02B 6/43
H01L 29/15
H01L 33/00
H01L 51/50
H01S
H01S 3/00
H01S 3/0941
H01S 3/23
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G11B
G11B 7/126
G11B 7/127
H01L
H01S
H04B 10/00

10

LIGHT
SEMICONDUCTOR(S)

2

Display results

IPC Definitions

References relevant to classification in this subclass

This subclass does not cover:

*Other electrical solid state **devices** which are not provided for in **H01L**:*

Use of semiconductor devices for measuring	G01
Resistors in general	H01C
Resistors, e.g. non-adjustable resistors from semiconductor material	H01C 7/00
Magnets, inductors, transformers	H01F
Capacitors in general	H01G
Electrolytic devices	H01G 9/00
Batteries, accumulators	H01M
Waveguides, resonators or lines of the waveguide type	H01P
Electrically-conductive connections, current collectors	H01R
Lasers , stimulated emission devices , e.g. semiconductor lasers	H01S, H01S 5/00
Electromechanical resonators	H03H
Loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers	H04R
Electric light sources in general	H05B
Printed circuits, hybrid circuits, casings or constructional details of electrical apparatus , manufacture of assemblages of electrical components	H05K
e.g. printed circuits and its manufacturing process	H05K 1/00, H05K 3/00

IPC Terms

IPC Terms search

Version 2014.01 - English

Word(s)

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Scheme Path

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G02B 6/43
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H01S
H01S 3/00
H01S 3/0941
H01S 3/23
H01S 5/00
H01S 5/40
H03F

11

C23F
F21K
G01J
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G11B
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G11B 7/127
H01L
H01S
H04B 10/00

10

LIGHT
SEMICONDUCTOR(S)

2

Display results

IPC Terms → Scheme

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IPC Official Publication

The screenshot shows the WIPO IP SERVICES International Patent Classification (IPC) Official Publication website. The header includes the WIPO logo, navigation links for 'IP SERVICES' and 'International Patent Classification (IPC) Official Publication', a search bar, and a language selector set to 'Français'. Below the header is a navigation bar with 'WORLD INTELLECTUAL PROPERTY ORGANIZATION' and tabs for 'Scheme', 'RCL', 'Compilation', 'Catchwords', and 'Guide to the IPC'. The main content area displays a list of IPC sections from A to H, each with a corresponding title in orange text. On the left side, there is a sidebar with various settings: 'Version' (2014.01), 'Current symbol' (input field), 'Language' (English selected), 'View mode' (full selected), and several checkboxes for 'Show CPC/FI', 'Deleted entries', 'Subclass indexes', 'Guidance Headings', and 'Notes'. At the bottom of the sidebar, there is a 'Search' section with 'Terms' and 'Cross-references' buttons, and an 'Assistance' section with a 'STATS' button highlighted by a red box and a 'Text categorization (IPCCAT)' button.

WIPO IP SERVICES International Patent Classification (IPC) Official Publication

Français

Search

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WORLD INTELLECTUAL PROPERTY ORGANIZATION

IPC Home Page - Help

Version: 2014.01

Current symbol: [input field]

Go to: [button]

Language: English, French, English/French

View mode: path, full, hierarchic

Show CPC/FI:

Deleted entries:

Subclass indexes:

Guidance Headings:

Notes:

Search: [Terms], [Cross-references]

Assistance: [STATS], [Text categorization (IPCCAT)]

Scheme	RCL	Compilation	Catchwords	Guide to the IPC
A				
SECTION A — HUMAN NECESSITIES				
B				
SECTION B — PERFORMING OPERATIONS; TRANSPORTING				
C				
SECTION C — CHEMISTRY; METALLURGY				
D				
SECTION D — TEXTILES; PAPER				
E				
SECTION E — FIXED CONSTRUCTIONS				
F				
SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING				
G				
SECTION G — PHYSICS				
H				
SECTION H — ELECTRICITY				

IPC STATS

IPC STATS search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

IPC	Relevance	Refine
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IPC STATS

IPC STATS search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

IPC	Relevance	Refine
H01L	28	»
H01S	25	»
G02B	14	»
G01N	8	»
G11B	6	»
G02F	6	»
H04B	5	»
A61B	5	»

Display results

IPC STATS

IPC STATS search

Version 2014.01 - English

Word(s)

Stemming

Limit to

Exclude

IPC	Relevance	Refine
H01L	28	»
H01S	25	«
5/183	25	
5/40	21	
5/14	20	
5/10	18	
5/022	18	

Display results

IPC Official Publication

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IPC Home Page - Help

Version: 2014.01

Current symbol: [input field]

Go to: [button]

Language: English, French, English/French

View mode: path, full, hierarchic

Show CPC/FI:

Deleted entries:

Subclass indexes:

Guidance Headings:

Notes:

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Assistance: [STATS], [Text categorization (IPCCAT)]

Scheme	RCL	Compilation	Catchwords	Guide to the IPC
A				SECTION A — HUMAN NECESSITIES
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C				SECTION C — CHEMISTRY; METALLURGY
D				SECTION D — TEXTILES; PAPER
E				SECTION E — FIXED CONSTRUCTIONS
F				SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
G				SECTION G — PHYSICS
H				SECTION H — ELECTRICITY

IPC: IPCCAT



IPCCAT - Categorization Assistant in the International Patent Classification (version 2011.01)

IPCCAT:

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[TACSY](#)

Last update: 201101

This is a categorization assistance tool for the International Patent Classification system. It is mainly designed to help to classify patents at IPC class, subclass or main group level.

Classification Request Form

Choose the document to categorize:

Browse...

Supported formats

Or paste in the text below a quote from the document to categorize:

A metal-clad optical waveguide with a semiconductor microcavity structure is proposed to increase the coupling efficiency of spontaneous emission into a lasing mode (spontaneous emission coefficient β) and to increase a total spontaneous emission rate simultaneously. Such a microcavity semiconductor laser with enhanced spontaneous emission has novel characteristics, including high quantum efficiency, low threshold pump rate, broad modulation bandwidth, and intensity noise reduced to below the shot-noise

Number of predictions:

Classification level:

Classify

Use keywords or full text

IPCCAT: Note

- IPCCAT is intended to be used on full sentences or longer texts.
- You can use it for shorter texts, but remember to put a period (full stop) after your search terms.

IPC: IPCCAT

Classification Request Form

Choose the document to categorize:

Or paste in the text below a quote from the document to categorize:

A metal-clad optical waveguide with a semiconductor microcavity structure is proposed to increase the coupling efficiency of spontaneous emission into a lasing mode (spontaneous emission coefficient β) and to increase a total spontaneous emission rate simultaneously. Such a microcavity semiconductor laser with enhanced spontaneous emission has novel characteristics, including high quantum efficiency, low threshold pump rate, broad modulation bandwidth, and intensity noise reduced to below the shot-noise limit (amplitude squeezing).

Number of predictions:

Classification level:

IPC: IPCCAT (results by subclass)

Suggested IPC Categories

Confidence	IPC	Description	Refine
★★★★★	H01S	💡	▶▶
★★	B82Y	💡	▶▶
★	C09K	💡	▶▶
	G01H	💡	▶▶
	G06N	💡	▶▶

Change classification level:

IPC: IPCCAT (refined results)

Suggested IPC Categories

Confidence	IPC	Description	Refine
★★★★★	H01S		▶▶
★★	B82Y		◀◀
★★★★★	B82Y 20/00		
★★	B82Y 10/00		
	B82Y 25/00		
	B82Y 35/00		
	B82Y 40/00		

Page: of 2

Change classification level:

















IPC: IPCCAT (results by main group)

Suggested IPC Categories

Confidence	IPC	Description	Refine
★★★★	H01S 5/00		
★★★★	H01S 3/00		
★★★	B82Y 20/00		
★	C09K 19/00		
★	H04W 28/00		

Change classification level:

IPC: Internet publication

Scheme	RCL	Compilation	Catchwords	Guide to the IPC
	H01S 5/00	Semiconductor lasers [7]		
		Note(s)		
		Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers. In this group, the Periodic System used is the 8 group system indicated by Roman numerals in the Periodic Table thereunder. [2010.01]		
	H01S 5/02	• Structural details or components not essential to laser action [7]		
	H01S 5/022	•• Mountings; Housings [7]		
	H01S 5/024	•• Cooling arrangements [7]		
	H01S 5/026	•• Monolithically integrated components, e.g. waveguides, monitoring photo-detectors or drivers (stabilisation of output H01S 5/06) [7]		
	H01S 5/028	•• Coatings [7]		
	H01S 5/04	• Processes or apparatus for excitation, e.g. pumping (H01S 5/06 takes precedence) [7]		
	H01S 5/042	•• Electrical excitation [7]		
	H01S 5/06	• Arrangements for controlling the laser output parameters, e.g. by operating on the active medium [7]		
	H01S 5/062	•• by varying the potential of the electrodes (H01S 5/065 takes precedence) [7]		
	H01S 5/0625	••• in multi-section lasers [7]		
	H01S 5/065	•• Mode locking; Mode suppression; Mode selection [7]		
	H01S 5/068	•• Stabilisation of laser output parameters (H01S 5/0625 takes precedence) [7]		
	H01S 5/0683	••• by monitoring the optical output parameters [7]		
	H01S 5/0687	•••• Stabilising the frequency of the laser [7]		
	H01S 5/10	• Construction or shape of the optical resonator [7]		

IPC: Bridge

Symbol H01S 5/00

 English

 French

IPC National translations

 Chinese

 German

 Spanish

 Russian

 Czech

 Japanese

 Slovak

 Dutch

 Korean

 Polish

 Estonian

 Serbian

 Portuguese

Patent databases

PATENTSCOPE

JPO IPDL

Espacenet

PAJ

FR Espacenet

DEPATIS

USPTO

SPD (SE)

Other classifications

USPC

CPC

FI/F-term

PATENTSCOPE: Results



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Analysis

Sort by: Pub Date Desc View: All List Length: 10

No	Ctr	Title	PubDate	Int.Class	Appl.No	Applicant	Inventor
1.	WO	WO/2014/131445 - LASER APPARATUS AND METHOD FOR LASER PROCESSING A TARGET MATERIAL	04.09.2014	H01S 5/00	PCT/EP2013/053961	WAVELIGHT GMBH	VOGLER, Klaus
<p>In an embodiment, a laser apparatus comprises a semiconductor laser (22), e.g., of the VECSEL type, for generating pulsed laser radiation having a pulse duration in the femtosecond range or shorter and having a pulse repetition rate of at least 100 MHz; a selector (54) for selecting groups (60) of pulses from the laser radiation, each pulse group comprising a plurality of pulses at the pulse repetition rate, wherein the pulse groups are time-displaced by at least 500 ns; a scanner device for scanning a focal point of the laser radiation; a controller for controlling the scanner device based on a control program including instructions that, when executed by the controller, bring about the creation of a LIOB-based photodisruption for each pulse group in a target material, e.g. human eye tissue.</p>							
2.	WO	WO/2014/132524 - HEAT DISSIPATION STRUCTURE AND OPTICAL TRANSCEIVER	04.09.2014	H01S 5/024	PCT/JP2013/083489	MITSUBISHI ELECTRIC CORPORATION	GOTO, Hideki
<p>This invention is provided with: a heat transmission member (21) having heat-receiving surfaces (211a, 211b) shaped as a curve along side surfaces (111, 121) of a cylinder part (12) and a stem (11) and provided so that the stem (11) and the cylinder part (12) can be fitted onto the heat-receiving surfaces (211a, 211b), and heat-dissipating surfaces (212a, 212b) provided with projected and retracted portions (213a, 213b); and a casing (22) carrying a light distributor (1) and the heat transmission member (21) and having heat-receiving surfaces (222a, 222b) provided with projected and retracted portions (223a, 223b) which engage with the projected and retracted portions (213a, 213b).</p>							

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