B82Y

SPECIFIC USES OR APPLICATIONS OF NANO-STRUCTURES; MEASUREMENT OR ANALYSIS OF NANO-STRUCTURES; MANUFACTURE OR TREATMENT OF NANO-STRUCTURES

Definition statement

This subclass/group covers:

Applications and aspects of nano-structures which are produced by any method, and is not restricted to those that are formed by manipulation of individual atoms or molecules.

Relationship between large subject matter areas

- This subclass is intended to enable a comprehensive search of subject matter related to nano-structures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of nano-structures that might also be entirely or partially covered elsewhere in the IPC. This subclass is for secondary classification, i.e. obligatory supplementary classification of subject matter already classified as such in other classification places.

- The classification symbols of this subclass are not listed first when assigned to patent documents.

- Note that B82Y uses the same definitions for nano-size, nano-scale and nanostructures as B82B, but that the definition of B82B is more restricted in that it relates to specific nanostructures formed by manipulation of individual atoms, molecules, or limited collections of atoms or molecules as discrete units. Documents classified in B82B should also be classified in B82Y

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nano-capsules for medicinal preparations	A61K 9/51
Langmuir-Blodgett films	B05D 1/20
Nanostructures formed by individual manipulation of atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof	B82B

Preparation of carbon nano-structures, e.g. bucky-balls, nanotubes, nanocoils, nano-doughnuts or nano-onions	C01B 31/0206
Scanning probe techniques	G01Q
Optical quantum wells or boxes	G02F 1/017
Nano-structured thin magnetic films	H01F 10/32
Molecular beam epitaxy [MBE]	H01F 41/30
Quantum wire FETs	H01L 29/775

Special rules of classification within this subclass

In this subclass, with the exception of B82Y 99/00, multi-aspects classification is applied, so that aspects of subject matter that are covered by more than one of its groups should be classified in each of those groups.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Nano-size, nano-scale	relate to a controlled geometrical size below 100 nanometres (nm) in one or more dimensions
Nano-structure	an entity having at least one nano-sized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nano-scale

B82Y 5/00

Nano-biotechnology or nano-medicine, e.g. protein engineering or drug delivery

Special rules of classification within this group

See also subclass B82Y.

Note that this group deals with artificial structures, particles etc. Proteins and viruses as they appear in nature are to be classified in C07K 14/00, C12N 9/00 or C12N 7/00 and (viral) vectors constructed by cloning techniques are to be classified in C12N 15/00.

Although they may be of nanosize, liposomes and virus-like particles (VLPs) are not considered to be nanotechnology.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Functionalized nanotube/ nanowire	linear nanostructures with a linear extension having a diameter of the order of 100 nanometer or less and a high aspect ratio (e.g > 1000), having specific chemical groups (e.g. receptors) physically or chemically bound to their surface.

Synonyms and Keywords

In patent documents the following abbreviations are often used:

CNT	Carbon Nanotubes
SWNT	Single Wall Nanotubes

In patent documents the expression/word "nanoparticle" is often used with the meaning "liposome" or "virus-like particles" (VLPs).

B82Y 10/00

Nano-technology for information processing, storage or transmission, e.g. quantum computing or single electron logic

Special rules of classification within this group

See subclass B82Y.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Nanowire, nanorod	nanostructure with a linear extension having a diameter of the order of 100 nanometer or less and a high aspect ratio (e.g > 1000)
Molecular wire	molecular-scale objects with linear structure, which conduct electrical current, commonly comprising freely moving electrodes

Synonyms and Keywords

In patent documents the following abbreviations are often used:

SET	Single Electron Transitor

B82Y 15/00

Nano-technology for interacting, sensing or actuating, e.g. quantum dots as markers in protein assays or molecular motors

Special rules of classification within this group

See subclass B82Y.

Note that this group deals with nanostructures used for sensing or actuating, wherein the nanostructure itself (e.g. quantum dot, nanotube) is at least part of the sensor or actuator. Macroscopic apparatuses used for sensing or actuating at a nanoscopic scale or resolution (like, e.g., scanning probe microscopes) are to be classified in B82Y 35/00.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Functionalized nanotube/ nanowire	linear nanostructures with a linear extension having a diameter of the order of 100 nanometer or less and a high aspect ratio (e.g > 1000), having specific chemical groups (receptors) physically or chemically bound to their

	surface.

B82Y 20/00

Nano-optics, e.g. quantum optics or photonic crystals

Special rules of classification within this group

See subclass B82Y.

B82Y 25/00

Nano-magnetism, e.g. magnetoimpedance, anisotropic magnetoresistance, giant magnetoresistance or tunneling magnetoresistance

Special rules of classification within this group

See subclass B82Y.

Synonyms and Keywords

In patent documents the following abbreviations are often used:

MTJ	magnetic tunnel junction
SV	spin valve
CPP	current-perpendicular-to-the-plane
CIP	current-in-the-plane
AP	antiparallel
APC	antiparallel coupling
APF	antiparallel free
MR	magnetoresistive or -resistivity or -resistance
AMR	anisotropic magnetoresistive
GMR	giant magnetoresistive

TMR	tunneling magnetoresistive
SVMR	spin valve magnetoresistive

B82Y 30/00

Nano-technology for materials or surface science, e.g. nano-composites

Special rules of classification within this group

See subclass B82Y.

Synonyms and Keywords

In patent documents the following abbreviations are often used:

CNT	carbon nanotubes
SWCNT	single wall carbon nanotubes
MWCNT	multi-wall carbon nanotubes
SAM	self-assembled monolayer
QD	quantum dot

B82Y 35/00

Methods or apparatus for measurement or analysis of nano-structures

Special rules of classification within this group

See subclass B82Y.

Synonyms and Keywords

In patent documents the following abbreviations are often used:

SPM	scanning probe microscope

AFM	atomic force microscope

B82Y 40/00

Manufacture or treatment of nano-structures

Special rules of classification within this group

See subclass B82Y.

Note that this deals with nanostructures as defined in B82Y. This means that for example documents relating to nano-composites which are prepared using pre-made nanostructures (i.e. as bought from a supplier) will not receive B82Y 40/00, since the nanostructures themselves are not prepared or manufactured in the document.

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Nano-structures	an entity having at least one nano-sized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nano-scale

Synonyms and Keywords

In patent documents the following abbreviations are often used:

CNT	carbon nanotubes
SWCNT	single wall carbon nanotubes
MWCNT	multi-wall carbon nanotubes
SAM	self-assembled monolayer
QD	quantum dot

B82Y 99/00

Subject matter not provided for in other groups of this subclass

Special rules of classification within this group

See subclass B82Y.

Documents are preferably not classified here. Therefore, all other groups take precedence.