

## B82Y

### SPECIFIC USES OR APPLICATIONS OF NANOSTRUCTURES; MEASUREMENT OR ANALYSIS OF NANOSTRUCTURES; MANUFACTURE OR TREATMENT OF NANOSTRUCTURES

#### Definition statement

*This place covers:*

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

#### Relationships with other classification places

- This subclass is intended to enable a comprehensive search of subject matter related to nanostructures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of nanostructures 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 nanosize, nanoscale 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](#)

#### References

##### Informative references

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

Nanocapsules for medicinal preparations	<a href="#">A61K 9/51</a>
Langmuir-Blodgett films	<a href="#">B05D 1/20</a>
Nanostructures formed by individual manipulation of atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof	<a href="#">B82B</a>
Preparation of carbon nanostructures, e.g. bucky-balls, nanotubes, nanocoils, nanodoughnuts or nanoonions	<a href="#">C01B 32/15</a>
Scanning probe techniques	<a href="#">G01Q</a>
Optical quantum wells or boxes	<a href="#">G02F 1/017</a>
Nanostructured thin magnetic films	<a href="#">H01F 10/32</a>
Molecular beam epitaxy [MBE]	<a href="#">H01F 41/30</a>
Quantum wire FETs	<a href="#">H10D 30/43</a>

#### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Nanosize, nanoscale	relate to a controlled geometrical size below 100 nanometres (nm) in one or more dimensions
---------------------	---

Nanostructure	an entity having at least one nanosized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nanoscale
---------------	--

## **B82Y 5/00**

### **Nanobiotechnology or nanomedicine, e.g. protein engineering or drug delivery**

#### **Special rules of classification**

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 place, 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 following words/expressions are often used with the meaning indicated:*

"nanoparticle"	"liposome" or "virus-like particles" (VLPs).
----------------	--

## **B82Y 10/00**

### **Nanotechnology for information processing, storage or transmission, e.g. quantum computing or single electron logic**

#### **Special rules of classification**

See subclass [B82Y](#).

#### **Glossary of terms**

*In this place, 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 Transistor
-----	----------------------------

## B82Y 15/00

**Nanotechnology for interacting, sensing or actuating, e.g. quantum dots as markers in protein assays or molecular motors**

### Special rules of classification

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 place, 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

**Nanooptics, e.g. quantum optics or photonic crystals**

### Special rules of classification

See subclass [B82Y](#).

## B82Y 25/00

**Nanomagnetism, e.g. magnetoimpedance, anisotropic magnetoresistance, giant magnetoresistance or tunneling magnetoresistance**

### Special rules of classification

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**

**Nanotechnology for materials or surface science, e.g. nanocomposites**

### **Special rules of classification**

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 nanostructures**

### **Special rules of classification**

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 nanostructures**

### **Special rules of classification**

See subclass [B82Y](#).

Note that this deals with nanostructures as defined in [B82Y](#). This means that for example documents relating to nanocomposites 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 place, the following terms or expressions are used with the meaning indicated:*

Nanostructures	an entity having at least one nanosized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nanoscale
----------------	--

### **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**

See subclass [B82Y](#).

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