U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

CLASSIFICATION ORDER 1885

FEBRUARY 3, 2009

PROJECT E-T007

The following classification changes will be effected by this order:

	Class	**Subclass**	**Art Unit**	**Ex'r Search Room No.**
Abolished:	None			
Established:	850 (New)	1-63	2881	RND0000B15

The following classes are impacted by this order:

250, 324, 360, 369,720, 977

This order includes the following:

A. CLASSIFICATION MANUAL CHANGES

C. CHANGES TO THE U.S.-I.P.C. CONCORDANCE

D. DEFINITION CHANGES AND NEW OR ADDITIONAL DEFINITIONS

CLASSIFICATION ORDER 1885

FEBRUARY 3, 2009

PROJECT E-T007

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CLASS 850 SCANNING-PROBE TECHNIQUES OR APPARATUS; APPLICATIONS OF SCANNING-PROBE TECHNIQUES, E.G., SCANNING PROBE MICROSCOPY [SPM]

FEBRUARY 2009

* 1 SCANNING OR POSITIONING ARRANGEMENTS, I.E., ARRANGEMENTS FOR ACTIVELY CONTROLLING THE MOVEMENT OR POSITION OF THE PROBE
* 2 .Coarse scanning or positioning
* 3 .Fine scanning or positioning
* 4 ..Circuits or algorithms therefor
* 5 MONITORING THE MOVEMENT OR POSITION OF THE PROBE RESPONSIVE TO INTERACTION WITH THE SAMPLE
* 6 .By optical means
* 7 .Self-detecting probes
* 8 AUXILIARY MEANS SERVING TO ASSIST OR IMPROVE THE SCANNING PROBE TECHNIQUES OR APPARATUS, E.G., DISPLAY OR DATA PROCESSING DEVICES
* 9 .Non-SPM analyzing devices, e.g., Scanning Electron Microscope [SEM], spectrometer or optical microscope
* 10 .Display or data processing devices
* 11 ..For error compensation
* 12 .Means for establishing or regulating a desired environmental condition within a sample chamber
* 13 ..Thermal environment
* 14 ..Fluid environment
* 15 ...Liquid environment
* 16 ..Vacuum environment
* 17 .Means for protecting or isolating the interior of a sample chamber from external environmental conditions or influences, e.g., vibrations or electromagnetic fields
* 18 .Sample handling device or method
* 19 CALIBRATION ASPECT, E.G., CALIBRATION OF PROBES
* 20 .Calibration standards and methods of fabrication thereof
* 21 PARTICULAR TYPE OF SCANNING PROBE MICROSCOPY [SPM] OR MICROSCOPE; ESSENTIAL COMPONENTS THEREOF
* 22 .Multiple-type SPM, i.e., involving two or more SPM techniques
* 23 ..Scanning Tunnelling Microscopy [STM] combined with Atomic Force Microscopy [AFM]
* 24 ..Scanning Near-field Optical Microscopy [SNOM] combined with Atomic Force Microscopy [AFM]
* 25 ..Magnetic Force Microscopy [MFM] combined with Atomic Force Microscopy [AFM]
* 26 .Scanning Tunnelling Microscopy [STM] or apparatus therefor, e.g., STM probes
* 27 ..Scanning Tunnelling Spectroscopy [STS]
* 28 ..Scanning tunnelling potentiometry [STP]
* 29 ..Probes, their manufacture, or their related instrumentation, e.g., holders
* 30 .Scanning Near-Field Optical Microscopy [SNOM] or apparatus therefor, e.g., SNOM probes
* 31 ..Fluorescence
* 32 ..Probes, their manufacture, or their related instrumentation, e.g., holders
* 33 .Atomic Force Microscopy [AFM] or apparatus therefor, e.g., AFM probes
* 34 ..Friction force microscopy
* 35 ..Adhesion force microscopy
* 36 ..Scanning potential microscopy
* 37 ..AC mode
* 38 ...Tapping mode
* 39 ..DC mode
* 40 ..Probes, their manufacture, or their related instrumentation, e.g., holders
* 41 ...Conductive probes
* 42 ...Functionalization
* 43 .Scanning Ion-Conductance Microscopy [SICM] or apparatus therefor, e.g., SICM probes
* 44 .Scanning Capacitance Microscopy [SCM] or apparatus therefor, e.g., SCM probes
* 45 ..Probes, their manufacture, or their instrumentation, e.g., holders
* 46 .Magnetic Force Microscopy [MFM] or apparatus therefor, e.g., MFM probes
* 47 ..Resonance
* 48 ..Probes, their manufacture, or their related instrumentation, e.g., holders
* 49 ...Probes with magnetic coating
* 50 .Scanning Thermal Microscopy [SThM] or apparatus therefor, e.g., SThM probes
* 51 .Scanning Electro-Chemical Microscopy [SECM] or apparatus therefor, e.g., SECM probes
* 52 GENERAL ASPECTS OF SPM PROBES, THEIR MANUFACTURE, OR THEIR RELATED INSTRUMENTATION, INSOFAR AS THEY ARE NOT SPECIALLY ADAPTED TO A SINGLE SPECIFIC SPM TECHNIQUE
* 53 .Probe holders
* 54 ..With compensation for temperature or vibration induced errors
* 55 .Probe tip arrays
* 56 .Probe characteristics
* 57 ..Shape or taper
* 58 ...Nano-tube tips
* 59 ..Particular materials
* 60 .Probe manufacture
* 61 ..Functionalization
* 62 APPLICATIONS OF SCANNING-PROBE TECHNIQUES OTHER THAN SPM
* 63 SCANNING-PROBE TECHNIQUES OR APPARATUS NOT OTHERWISE PROVIDED FOR

Title Change
* Newly Established Subclass
@ Indent Change
& Position Change

FEBRUARY 03, 2009

PROJECT E-T009

C. CHANGES TO THE USPC-TO-IPC CONCORDANCE

USPC Class	USPC Subclass	IPC Subclass	IPC Notation
850	1-22	G01N	13/10, 13/12
	23		13/16, 13/14
	24		13/16, 13/22
	25		13/16, 13/12
	26-29	G12B	21/04,
		G01N	13/14
	30-32	G12B	21/06,
		G01N	13/16
	33-42	G12B	21/08
	43	G01N	13/18
	44-45		13/20, 13/22
	46-49	G12B	21/10
	50	G01N	13/10
	51		13/24
	52-61	G12B	21/02
	62, 63	G01N	13/10

FEBRUARY O3, 2009

PROJECT E-T007

D. CHANGES TO THE DEFINITIONS

CLASS 250 – RADIANT ENERGY

Subclass 306: Under SEE OR SEARCH CLASS

Insert:

850, Scanning Probe Microscope (SPM), subclass 9 for analyzing devices other than scanning probe microscopes used in conjunction with SPM.

D. CHANGES TO THE DEFINITIONS

CLASS 324 – ELECTRICITY:MEASURING AND TESTING

Subclass 307: Under SEE OR SEARCH CLASS

Insert:

850, Scanning Probe Microscope, subclasses 46-49 for magnetic force microscopy.

D. CHANGES TO THE DEFINITIONS

CLASS 360 – DYNAMIC MAGNETIC INFORMATION STORAGE OR RETRIEVAL

Class Definition: In Section IV, under SEE OR SEARCH CLASS

Insert:

850, Scanning Probe Microscope (SPM), subclass 62 for information storage or retrieval using scanning probe microscope.

D. CHANGES TO THE DEFINITIONS

CLASS 369 – DYNAMIC INFORMATION STORAGE OR RETRIEVAL

Class Definition: Section IV, under SEE OR SEARCH CLASS

Insert:

850, Scanning Probe Microscope (SPM), subclass 62 for information storage or retrieval using scanning probe microscope.

D. CHANGES TO THE DEFINITIONS

CLASS 720 - DYNAMIC OPTICAL INFORMATION STORAGE OR RETRIEVAL

Class definition: Section II, under SEE OR SEARCH CLASS

Insert:

850, Scanning Probe Microscope (SPM), subclass 62 for information storage or retrieval using scanning probe microscope.

D. CHANGES TO THE DEFINITIONS

CLASS 850 - SCANNING-PROBE TECHNIQUES OR APPARATUS; APPLICATIONS OF SCANNING-PROBE TECHNIQUES, E.G., SCANNING PROBE MICROSCOPY [SPM]

SECTION I - CLASS DEFINITION

This class covers Scanning probes, i.e., devices having at least a tip of nanometre sized dimensions that scans or moves over an object surface, typically at a distance of a few angstroms or nanometres, monitoring some interaction between the tip and the surface, e.g., monitoring the generation of a tunnelling current and techniques or apparatus involving the use of scanning probes.

The following subjects are therefore covered, the list being non-exhaustive:

scanning probes, per se, their manufacture or their related instrumentation, e.g., holders; scanning probe microscopy (SPM) or microscopes, i.e., the application of scanning probes to the investigation or analysis of a surface structure in atomic ranges; applications, other than SPM, involving the use of scanning probes.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS:

73, Measuring and Testing, is the generic class for processes and apparatus for making a measurement of any kind or for making a test of any kind. It takes all such subject matter not provided for in other classes. Claimed subject matter directed to a specific structure or method of SPM is classifiable in Class 850. 324, Electricity: Measuring and Testing, is the residual home for all subject matter, not elsewhere classified, relating to the measuring, testing or sensing of electric properties. Claimed subject matter directed to a specific structure or method of SPM is classifiable Class 850.

SECTION III – SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1-4, for details of arrangements for operator to control the movement or position of the probe.

5-7, for monitoring the movement or position of the probe by means built in the probe device responsive to an interaction with the sample.

21-51, for particular type of scanning probe microscope (SPM) and manufacture thereof.

52-61, for aspects of SPM probes and their manufacture in general.

62, for application of SPM other than analyzing surface sample.

SECTION 1V – REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 104, 105 for testing or inspecting surfaces or edges in general and subclass 866 for the testing of material not elsewhere classifiable.

216, Etching a Substrate: Processes, appropriate subclasses for surface etching processing using SPM.

250, Radiant Energy, subclasses 306 - 443.1 apparatus and methods for the inspection of solids or liquids in which charged particles, impelled (as in a beam) toward the object to be inspected and pass near to or through the object, or are reflected from or diffracted by the object, or secondary radiations emitted from the object, are detected.

324, Electricity: Measuring and Testing, subclass 72.5 for testing potential in specific environments using a voltage probe; subclasses 76.11-157 for measuring, testing, or sensing electricity, per se, using probes; subclasses 307-315 for means to measure the effects of external magnetic fields upon the resonance of a host material in a controlled electromagnetic field; subclasses 425-450 for using probes to test electrolytes; subclasses 500-556 for fault detecting in electric circuits and of electric components using probes, and subclasses 600-727 for testing impedance, admittance

or other quantities representative of electrical stimulus/response relationships using probes, especially subclass 690 for capacitance sensing using probes.

360, Dynamic magnetic Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording.

369, Dynamic Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording.

427, Coating Process, appropriate subclasses for surface coating processing using SPM; especially subclasses 357-601 for coating processes with direct application of electrical, magnetic, wave, or particular energy using SPM.

720, Dynamic Optical Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording for processes and apparatus for making a measurement of any kind or for making a test of any kind, and takes all such subject matter not provided for in other classes.

977, Nanotechnology, subclasses 849-881 for subject matter appropriately crossed into this cross reference art collection.

Subclasses

1 SCANNING OR POSITIONING ARRANGEMENTS, I.E., ARRANGEMENTS FOR ACTIVELY CONTROLLING THE MOVEMENT OR POSITION OF THE PROBE:

This subclass is indented under the class definition. Subject matter includes details about means or methods for actively controlling the movement or the location of the scanning probe tip relative to the object surface.

(1) Note. This subclass and its indents are directed to arrangements for an operator to control the movement or position of the probe.

SEE OR SEARCH THIS CLASS, SUBCLASS

5, for means to monitor movements of the probe caused by a response of the probe to an interaction with the sample.

2 Coarse scanning or positioning:

This subclass is indented under subclass 1. Subject matter including generating movement of the scanning probe tip relative to the object surface at a scale larger than the resolution of the scanning probe microscope.

3 Fine scanning or positioning:
This subclass is indented under subclass 1. Subject matter including generating movement of the scanning probe tip relative to the object surface as large as the scale of the resolution of the scanning probe microscope.

4 Circuits or algorithms therefor:
This subclass is indented under 3. Subject matter including electronic means for locating or stabilizing the movement of the scanning probe tip relative to the object surface.

5 MONITORING THE MOVEMENT OR POSITION OF THE PROBE RESPONSIVE TO INTERACTION WITH THE SAMPLE:
This subclass is indented under the class definition. Subject matter including a method or apparatus used to monitor the movement of the probe.

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, for arrangements for an operator to control the movement or position of the probe.

6 By optical means:
This subclass is indented under subclass 5. Subject matter wherein the monitoring involves the use of a light-sensitive/responsive device.

SEE OR SEARCH CLASS:

359, Optical: Systems and Elements, subclasses 15-20 for optical device in which a hologram is used to direct a beam of light over the elements of a given region; subclasses 201-208 for optical scanning.

7 Self-detecting probes:
This subclass is indented under subclass 5. Subject matter wherein the probe comprises in their structure means for detecting a signal to control/monitor its movements (e.g., piezoelectric gauge).

(1) Note. An example for Self-detecting probe is the probe itself generates a signal representative of its position, e.g., piezo-electric gauge.

8 AUXILIARY MEANS SERVING TO ASSIST OR IMPROVE THE SCANNING PROBE TECHNIQUES OR APPARATUS, E.G., DISPLAY OR DATA PROCESSING DEVICES:
This subclass is indented under the class definition. Subject matter including a additional device or method that assists or improves the analysis or the investigation.

9 Non-SPM analyzing devices, e.g., Scanning Electron Microscope [SEM], spectrometer or optical microscope:
This subclass is indented under subclass 8. Subject matter wherein the additional device is an analyzing or investigating device different from a scanning probe microscope.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 306-311 for analyzing device which impels charged particles toward a object or material to be studied; subclass 310 for scanning electron microscope.

359, Optical: Systems and Elements, subclasses 368-398 for optical microscopes, per se.

10 Display or data processing devices:
This subclass is indented under subclass 8. Subject matter including a programmable device that stores, retrieves, processes or displays data for assisting or improving the scanning probe technique or apparatus.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, for appropriate subclasses.

11 For error compensation:
This subclass is indented under subclass 10. Subject matter wherein the data information is used to correct or fix the performance of the SPM.

12 Means for establishing or regulating a desired environmental condition within a sample chamber:
This subclass is indented under subclass 8. Subject matter including means that can adjust or control the parameters, such as temperature, pressure, humidity, etc., of a working environment condition inside the chamber containing the sample being studied.

(1) Note. included in this subclass is means for actively establishing desired environmental within the sample chamber such as by heating the chamber to an elevated temperature, filling the chamber with a liquid, or other such means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

17, for means for preventing undesired external phenomena such as breezes, vibrations from people walking nearby, etc., from having any effect on conditions within the sample chamber.

13 Thermal environment:
This subclass is indented under subclass 12. Subject matter including means to adjust or control the temperature of the sample chamber, e.g., a cryostat or heater that allows SPM to be performed at low or high temperatures.

14 Fluid environment:
This subclass is indented under subclass 12. Subject matter including means that can adjust or control the parameters, i.e. pressure or compositions, of the materials of the environment inside the sample chamber.

(1) Note. Materials of the fluid environment can be of liquid state or gas.

15 Liquid environment:
This subclass is indented under subclass 14. Subject matter wherein the fluid environment is a liquid such as water or other liquid chemical inside the sample chamber.

16 Vacuum environment:
This subclass is indented under subclass 12. Subject matter including means that can establish or maintain no or few molecules (or atoms) inside the chamber e.g., pumping means to reduce pressure inside the chamber.

17 Means for protecting or isolating the interior of a sample chamber from external environmental conditions or influences, e.g., vibrations or electromagnetic fields:
This subclass is indented under subclass 8. Subject matter including means that prevents SPM from being disturbed by a condition outside the scanning probe microscope such as vibration, temperature, pressure, etc.

(1) Note. The SPM is protected as a whole under the adverse condition. For example, a specific housing or arrangement to eliminate external vibrations to assure the stability of the microscope, or shielding that protects it from electromagnetic fields.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12, for Environmental regulation means for sample chamber

54, for Regulations/error compensation means integrated in the probe

18 Sample handling device or method:
This subclass is indented under subclass 8. Subject matter including a method or device that mechanically positions or conditions a sample for analysis or investigation (e.g., tweezers, cutting means).

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 863-864.91 for sample and sample handling in general.

19 CALIBRATION ASPECT, E.G., CALIBRATION OF PROBES:
This subclass is indented under the class definition. Subject matter including a method or apparatus used to adjust or rectify a SPM device, e.g., the probe itself, to a desired standard.

SEE OR SEARCH CLASS:

702, Data Processing; Measuring, Calibrating, or Testing, subclass 104 for calibrating or correcting a tranducer in a data processing system or calculating computer of a measurement or testing system.

20 Calibration standards or methods of fabrication thereof:
This subclass is indented under subclass 19. Subject matter including a structure with nanometric resolution used for correcting or fixing the performance of the SPM device before its utilization, e.g., grating with a known line separation; and its related manufacture.

21 PARTICULAR TYPE OF SCANNING PROBE MICROSCOPY [SPM] OR MICROSCOPE; ESSENTIAL COMPONENTS THEREOF:
This subclass is indented under the class definition. Subject matter including a method or device for which the type of interaction between the scanning probe tip and the sample surface is specified.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 306-311 for the inspection of solids or liquids by inspected and which pass near to or through the object, or are reflected from or diffracted by the object, or secondary radiations emitted from the object, are detected.

977, Nanotechnology, subclasses 849-881 for subject matter appropriately crossed into this cross reference art collection.

22 Multiple-type SPM, i.e., involving two or more SPM techniques:
This subclass is indented under subclass 21. Subject matter involving two or more different types of interactions.

(1) Note. The device can contain either one probe or more than one probe to perform different types of SPM over the sample. Although, a cantilever-type SNOM can perform the function of AFM, not every SNOM of such a type should be classified here.

SEE OR SEARCH THIS CLASS, SUBCLASS:

30, for cantilever-type SNOMs which are explicitly built for AFM performances.

55, for devices containing array of tips with similar performance function.

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 13.33 for storage or retrieval by the simultaneous application of a magnetic field and near field optics.

23 Scanning Tunnelling Microscopy [STM] combined with Atomic Force Microscopy [AFM]:

This subclass is indented under subclass 22. Subject matter wherein the two interactions are tunnelling current (STM) and the attractive or repulsive force between the probe and the sample surface (AFM).

SEE OR SEARCH THIS CLASS, SUBCLASS:

26, for specific STMs.

33, for specific AFMs.

24 Scanning Near-field Optical Microscopy [SNOM] combined with Atomic Force Microscopy [AFM]:

This subclass is indented under subclass 22. Subject matter wherein the two interactions involve near-field light emitted from the sample surface (SNOM) and the attractive or repulsive force between the probe and the sample surface (AFM).

SEE OR SEARCH THIS CLASS, SUBCLASS:

30, for specific SNOMs.

33, for specific AFMs.

25 Magnetic Force Microscopy [MFM] combined with Atomic Force Microscopy [AFM]:

This subclass is indented under subclass 22. Subject matter wherein the two interactions are between the magnetic force between the sample and the probe (MFM) and the attractive or repulsive force between the probe and the sample surface (AFM).

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, for specific MFMs.

33, for specific AFMs .

26 Scanning Tunnelling Microscopy [STM] or apparatus therefor, e.g., STM probes:

This subclass is indented under subclass 21. Subject matter wherein the monitored interaction is the tunnelling current between the tip and the sample which are in very close proximity but not actually in physical contact.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, subclass 324.2 for magnetic recording heads having a tunnel junction effect.

977, Nanotechnology, subclass 861 for subject matter classified in this subclass and its indents is requested to be appropriately crossed into the cross reference art collection class.

27 Scanning Tunnelling Spectroscopy [STS]:
This subclass is indented under subclass 26. Subject matter including analyzing or investigating the local electronic state of surface.

28 Scanning Tunnelling Potentiometry [STP]:
This subclass is indented under subclass 26. Subject matter including analyzing or investigating of electric potential distribution on the sample.

29 Probes, their manufacture, or their related instrumentation, e.g., holders:
This subclass is indented under subclass Subject matter under subclass26 including a specific aspect of the probe, its manufacture, or its related instrumentation, e.g., holders.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, for process of probe fabrication that is not applied to any specific type of scanning probe.

30 Scanning Near-Field Optical Microscopy [SNOM] or apparatus therefor, e.g., SNOM probes:
This subclass is indented under subclass 21. Subject matter wherein the monitored interaction involves near-field light emitted or reflected from the sample surface.

(1) Note. subject matter classified in this subclass and its indents is requested to be appropriately crossed into the cross reference

SEE OR SEARCH CLASS:

369, Dynamic Information Storage or Retrieval, subclass 13.33 for storage or retrieval by the simultaneous application of a magnetic field and near field optics, and subclasses 43- 44.42 for information storage or retrieval with servo positioning of transducer assembly over track combined with information signal processing.

977, Nanotechnology, subclass 862 for subject matter classified in this subclass and its indents is requested to be appropriately crossed into the cross reference art collection class.

31 Fluorescence:
This subclass is indented under subclass 30. Subject matter wherein the near-field light to be monitored is the emission from a sample surface excited by an electromagnetic wave.

32 Probes, their manufacture, or their related instrumentation, e.g., holders:
This subclass is indented under subclass 30. Subject matter including a specific aspect of the probe, its manufacture, or its related instrumentation, e.g., holders.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, for process of probe fabrication that is not applied to any specific type of scanning probe.

33 Atomic Force Microscopy [AFM] or apparatus therefor, e.g., AFM probes:
This subclass is indented under subclass 21. Subject matter wherein the monitored interaction is the short range repulsive or long range attractive force between the probe and atoms of the sample surface.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 863 for subject matter classified in this subclass and its indents is requested to be appropriately crossed into the cross reference art collection class.

34 Friction force microscopy:
This subclass is indented under subclass 33. Subject matter wherein the force is the shear force between probe and atoms of the sample surface.

35 Adhesion force microscopy:
This subclass is indented under subclass 33. Subject matter wherein the force monitored is the force that tends to keep the probe in contact with the sample surface.

36 Scanning potential microscopy:
This subclass is indented under subclass 33. Subject matter wherein the force is an electric interaction affected by the electric potential distribution on the sample surface. (e.g., Kelvin probe microscopy and Scanning Maxwell stress microscopy, etc.).

37 AC mode:
This subclass is indented under subclass 33. Subject matter wherein the probe is, or is mounted on, a vibrating cantilever.

38 Tapping mode:

This subclass is indented under subclass 37. Subject matter wherein tip of probe touches periodically the sample surface.

39 DC mode:
This subclass is indented under subclass 33. Subject matter wherein the probe is, or is mounted on, a static (i.e., vibrationless) cantilever.

40 Probes, their manufacture, or their related instrumentation, e.g., holders:
This subclass is indented under subclass 33. Subject matter under including a specific aspect of the probe, its manufacture, or its related instrumentation, e.g., holders.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, for process of probe fabrication that is not applied to any specific type of scanning probe.

41 Conductive probes:
This subclass is indented under subclass 40. Subject matter wherein the probe is made of a material that conducts electric charges.

SEE OR SEARCH THIS CLASS, SUBCLASS:

23, for conductive probes that perform the function of STM probes

42 Functionalization:
This subclass is indented under subclass 40. Subject matter including adding specific particles to the tip to give it another characteristic, e.g., specific chemical receptor for biochemical analysis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

61, for functionalization of tips that are not specifically for atomic force microscopes

43 Scanning Ion-Conductance Microscopy [SICM] or apparatus therefor, e.g., SICM probes:
This subclass is indented under subclass 21. Subject matter wherein the interaction to be observed is ion flow between the probe tip and the sample surface.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 861 for subject matter classified in this subclass and is requested to be appropriately crossed into the cross reference art collection class.

44 Scanning Capacitance Microscopy [SCM] or apparatus therefor, e.g., SCM probes:

This subclass is indented under subclass 21. Subject matter wherein the interaction to be observed is the electrical capacity between tip and the sample surface.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 866 for subject matter classified in this subclass and is requested to be appropriately crossed into the cross reference art collection class.

45 Probes, their manufacture, or their related instrumentation, e.g., holders:

This subclass is indented under subclass 44. Subject matter including a specific aspect of the probe, its manufacture, or its related instrumentation, e.g. holders.

46 Magnetic Force Microscopy [MFM] or apparatus therefor, e.g., MFM probes:

This subclass is indented under subclass 21. Subject matter wherein the interaction is a magnetic force between the sample and the tip.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 865 for subject matter classified in this class and is requested to be appropriately crossed into the cross reference art collection class.

47 Resonance:

This subclass is indented under subclass 46. Subject matter wherein a spin magnetic moment is induced by a specific magnetic field frequency.

48 Probes, their manufacture, or their related instrumentation, e.g., holders:

This subclass is indented under subclass 46. Subject matter including a specific aspect of the probe, its manufacture, or its related instrumentation, e.g., holders.

SEE OR SEARCH CLASS

977, Nanotechnology, subclasses 872-879 for subject matter classified in these subclasses and their indents are requested to be appropriately crossed into the cross reference art collection class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, for process of probe fabrication that is not applied to any specific type of scanning probe.

49 Probes with magnetic coating:
This subclass is indented under subclass 48. Subject matter including a probe tip which is covered by some material with a magnetic property.

50 Scanning thermal microscopy [SThM] or apparatus therefor, e.g., SThM probes:
This subclass is indented under subclass 21. Subject matter wherein the monitored interaction is the heat or temperature of the sample surface.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 867 for subject matter classified in this subclass and is requested to be appropriately crossed into the cross reference art collection class.

51 Scanning Electro-Chemical Microscopy [SECM] or apparatus therefor, e.g., SECM probes:
This subclass is indented under subclass 21. Subject matter wherein the monitored interaction that is monitored is the Faraday current generated by an electrochemical reaction.

SEE OR SEARCH CLASS

977, Nanotechnology, subclass 872-879 for subject matter classified in these subclasses and their indents are requested to be appropriately crossed into the cross reference art collection class.

52 GENERAL ASPECTS OF SPM PROBES, THEIR MANUFACTURE, OR THEIR RELATED INSTRUMENTATION, INSOFAR AS THEY ARE NOT SPECIALLY ADAPTED TO A SINGLE SPM TECHNIQUE:
This subclass is indented under the class definition. Subject matter including a SPM probe, its manufacture, or its related instrumentation, insofar as not peculiar to a specific SPM technique.

SEE OR SEARCH CLASS

977, Nanotechnology, subclasses 872-879 for subject matter classified in these subclasses and their indents are requested to be appropriately crossed into the cross reference art collection class.

53 Probe holders:
This subclass is indented under subclass 52. Subject matter including means to mount a probe in a scanning probe microscope.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 866.5 for probes mountings in which a particular sensing element is either not specified or not

otherwise provided for, or there are plural sensing elements, none of which is otherwise provided for.

54 With compensation for temperature or vibration induced errors:
This subclass is indented under subclass 53. Subject matter including means integrated in the probe holder that can adjust the probe to correct for errors caused by temperature variations or vibrations.

SEE OR SEARCH THIS CLASS, SUBCLASS:

11, for Error compensation in general.

17, for Protection of the scanning probe microscope in general.

55 Probe tip arrays:
This subclass is indented under subclass 52. Subject matter wherein multiple tips of similar characteristics form a line or a matrix.

56 Probe characteristics:
This subclass is indented under subclass 52. Subject matter including a specific aspect of the probe.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 866.5 for probes in which a particular sensing element is either not specified, not otherwise provided for, or there are plural sensing elements, none of which is otherwise provided for.

977, Nanotechnology, subclasses 875-879 for subject matter classified in these subclasses and their indents are requested to be appropriately crossed into the cross reference art collection class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, for Process of probe fabrication.

57 Shape or taper:
This subclass is indented under subclass 56. Subject matter wherein the physical form of the tip or the degree of slope or angle of the tip is specified.

58 Nanotube tips:
This subclass is indented under subclass 57. Subject matter wherein the probe has a nano-sized tube such as Carbon Nanotube.

SEE OR SEARCH CLASS

977, Nanotechnology, subclasses 875-879 subject matter classified in these subclasses and their indents are requested to be appropriately crossed into the cross reference art collection class.

59 Particular materials:
This subclass is indented under subclass 56. Subject matter wherein the scanning probe or a component thereof (e.g., a cantilever or a covering material on the tip) is made of some material that gives a particular property to the scanning probe.

60 Probe Manufacture:
This subclass is indented under subclass 52. Subject matter including processes of probe fabrication.

61 Functionalization:
This subclass is indented under subclass 60. Subject matter including adding specific particles to the probe tip to give it another characteristic, e.g., specific chemical receptor for biochemical analysis.

62 APPLICATIONS OF SCANNING-PROBE TECHNIQUES OTHER THAN SPM:
This subclass is indented under the class classification. Subject matter including a specific application of a scanning-probe technique not otherwise provided for.

SEE OR SEARCH CLASS:

216, Etching a Surface: Processes, appropriate subclasses for surface etching processing using SPM.

360, Dynamic magnetic Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording

369, Dynamic Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording

427, Coating Process, appropriate subclasses for surface coating processing using SPM; especially subclasses 357-601 for coating processes with direct application of electrical, magnetic, wave, or particular energy using SPM.

720, Dynamic Optical Information Storage or Retrieval, appropriate subclasses for information recording using SPM in accordance with means for recording

63 SCANNING-PROBE APPARATUS OR TECHNIQUES NOT OTHERWISE PROVIDED FOR:

This subclass is indented under the class definition. Subject matter including general or specific scanning-probe apparatus or techniques not otherwise provided for.

D. CHANGES TO THE DEFINITIONS

CLASS 977- SCANNING-PROBE TECHNIQUES OR APPARATUS; APPLICATIONS OF SCANNING-PROBE TECHNIQUES, E.G., SCANNING PROBE MICROSCOPY [SPM]

Subclass 860:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope, subclasses 21-63 for scanning probe characteristics and their manufacture.

Subclass 861:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope, subclasses 26-29 for Scanning Tunnelling Microscopy (STM) or apparatus therefor.

Subclass 862:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope, subclasses 30-32, for Scanning Near-Field Optical Microscopy (SNOM) or apparatus therefor.

Subclass 863:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope, subclasses 33-42 for Atomic Force Microscopy (AFM) or apparatus therefor.

Subclass 865: Under SEE OR SEARCH CLASS:

Insert:

850, Scanning Probe Microscope, subclasses 46-49 for Magnetic Force Microscopy (MFM) or apparatus therefor.

Subclass 866: Under SEE OR SEARCH CLASS:

Insert:

850, Scanning Probe Microscope, subclasses 44-45 for Scanning Capacitance Microscopy (SCM) or apparatus therefor.

Subclass 867: Under SEE OR SEARCH CLASS:

Insert:

850, Scanning Probe Microscope, subclass 50 for Scanning Thermal Microscopy (SThM) or apparatus therefor.

Subclass 868: Under SEE OR SEARCH CLASS:

Insert:

850, Scanning Probe Microscope (SPM), subclass 9 for optical means used in conjunction with scanning probe microscope.

Subclass 871:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope (SPM), subclasses 1-4 for scanning or positioning arrangements.

Subclass 875:

Insert:

SEE OR SEARCH CLASS:

850, Scanning Probe Microscope (SPM), subclasses 52-61 for probe characteristics and their manufacture.