G21H

OBTAINING ENERGY FROM RADIOACTIVE SOURCES; APPLICATIONS OF RADIATION FROM RADIOACTIVE SOURCES, NOT OTHERWISE PROVIDED FOR; UTILISING COSMIC RADIATION (measurement of nuclear or X-radiation G01T; fusion reactors G21B; nuclear reactors G21C; lamps in which a gas filling is excited to luminescence by external corpuscular radiation or by radioactive material structurally associated with the lamp H01J 65/04, H01J 65/06)

Definition statement

This place covers:

Arrangements for obtaining electrical energy from radioactive sources, e.g. from radioactive isotopes.

Arrangements for direct conversion of radiation energy from radioactive sources into forms of energy other than electrical energy.

Applications of radiation from radioactive sources or arrangements therefor, not otherwise provided for.

Use of effects of cosmic radiation.

References

Limiting references

This place does not cover:

Measurement of nuclear or X-radiation	G01T
Fusion reactors	G21B
Nuclear fission reactors	G21C
Lamps in which a gas filling is excited to luminescence by external corpuscular radiation or by radioactive material structurally associated with the lamp	H01J 65/04, H01J 65/06

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Use of radiation to produce mutation in plants	A01H 1/06
Preservation of meat, sausages, fish, eggs, fruit, vegetables or edible seeds by irradiation without heating effect	A23B 4/015, A23B 5/015, A23B 7/015, A23B 9/06
Preservation of milk or milk preparations by irradiation	A23C 3/07
Preservation of non-alcoholic beverages or foodstuffs by irradiation without heating	A23L 2/50, A23L 3/26
Medicinal preparations obtained by treating materials with wave energy or particle radiation	A61K 41/00
Methods or apparatus using radiation for disinfecting or sterilising materials or objects other than foodstuffs or contact lenses	A61L 2/08
Applying radioactive material to the body	A61M 37/0069, A61N 5/10

Radiation therapy; therapy using X-rays, gamma rays or particle-irradiation	A61N 5/00, A61N 5/10
Direct application of radiation to physical, chemical or physico-chemical processes in general	B01J 19/08
Use of radiation for separating dispersed particles from gases or vapour, e.g. air, by electrostatic effect	B03C 3/38
Use of radiation for pre-treatment of surfaces to which liquids or other fluent materials are to be applied, or after-treatment of applied coatings	B05D 3/06
Use of radiation in the working of plastics; after-treatment of articles without altering their shape; apparatus therefor	B29C 71/04
Railway trackside devices actuated by radiation and controlled by interaction with a vehicle or train	B61L 1/10
Railway trackside devices using radiation to control devices on a vehicle or train	B61L 3/06
Polymerisation initiated by wave energy or particle radiation; in addition polymers	C08F 2/46, C08F 2/54, C08G 2/02
Processes for treating or compounding macromolecular substances by wave energy or particle radiation	C08J 3/28
Chemical treatment or coating of shaped articles made of macromolecular substances using wave energy or particle radiation	C08J 7/18
Use of radiation for cracking of hydrocarbon oils	C10G 15/10, C10G 32/04
Use of radiation for reforming naphtha	C10G 35/16
Use of radiation for pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages	C12H 1/06, C12H 1/16
Use of radiation for bleaching fibres, threads, yarns, fabrics, feathers, or made-up fibrous goods, leather or furs	D06L 4/50
Measuring angles, areas, length, thickness or similar dimensions, or irregularities of surfaces or contours, using wave or particle radiation	G01B 15/00
Transducers not specially adapted for a specific variable using wave or particle radiation derived from a radioactive source	G01D 5/50, G01D 5/62
Investigating fluid tightness of structures using radioactive material	G01M 3/20
Investigating or analysing materials by the use of wave or particle radiation	G01N 23/00
Investigating or analysing materials through the ionisation of gases, using wave or particle radiation to ionise a gas	G01N 27/64
Chemical analysis of biological material; immunoassay or bio-specific binding assays involving radioactive-labelled substances	G01N 33/534, G01N 33/60
Geophysics; prospecting or detecting using primary nuclear radiation sources	G01V 5/08
Fire alarms or alarms responsive to explosion, actuated by the presence of smoke or gas detected by an ionisation chamber	G08B 17/11
Carrying off electrostatic charges by means of ionising radiation	H05F 3/06

Informative references

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

Preservation of milk or milk preparations in general, of cream, butter, and cheese	A23C 3/00, A23C 13/08, A23C 15/18, A23C 19/097
Introduction of isotopes of elements into organic compounds	C07B 59/00
Techniques for handling particles or ionising radiation not otherwise provided for	G21K 1/00 - G21K 4/00
Particle spectrometer ion sources or ion guns using particle bombardment, e.g. ionisation chambers	H01J 49/14
Semiconductor devices sensitive to electromagnetic or corpuscular radiation	H01L 31/00
Lasers	H01S 3/00

Special rules of classification

Classification of both important (invention) information and additional information is obligatory.

G21H 1/00

Arrangements for obtaining electrical energy from radioactive sources, e.g. from radioactive isotopes {, nuclear or atomic batteries}

References

Informative references

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

Photoelectric discharge tubes not involving the ionization of a gas	H01J 40/00
Discharge tubes functioning as thermionic generators	H01J 45/00
Tubes for determining the presence, intensity, density or energy of radiation or particles	H01J 47/00
Thermoelectric devices comprising a junction of dissimilar materials	H10N 10/00

G21H 1/04

Cells using secondary emission induced by alpha radiation, beta radiation, or gamma radiation

References

Informative references

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

Photoelectric discharge tubes not involving the ionisation of a gas	H01J 40/00
Discharge tubes functioning as thermionic generators	H01J 45/00
Tubes for determining the presence, intensity, density or energy of radiation or particles	H01J 47/00

G21H 1/06

Cells wherein radiation is applied to the junction of different semiconductor materials

References

Informative references

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

Devices of the surface barrier or shallow PN junction detector type, e.g. surface barrier alpha-particle detectors	H01L 31/118

G21H 1/08

Cells in which radiation ionises a gas in the presence of a junction of two dissimilar metals, i.e. contact potential difference cells

References

Informative references

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

Electric discharge tubes or discharge lamps	H01J

G21H 1/10

Cells in which radiation heats a thermoelectric junction or a thermionic converter

Definition statement

This place covers:

Cells in which radiation of disintegration heat heats a thermoelectric junction or a thermionic converter.

References

Informative references

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

Devices where heating occurs from fission reactions	G21C 3/04
Discharge tubes functioning as thermionic generators	H01J 45/00
Thermoelectric devices comprising a junction of dissimilar materials	H10N 10/00

G21H 3/00

Arrangements for direct conversion of radiation energy from radioactive sources into forms of energy other than electric energy, e.g. {into} light {or mechanic energy}

References

Informative references

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

Lasers	H01S 3/00
Lasers pumped by high energy nuclear particles	H01S 3/0957
Gamma masers	H01S 4/00

G21H 3/02

in which material is excited to luminesce by the radiation (lamps in which a gas filling or screen or coating is excited to luminesce by radioactive material structurally associated with the lamp H01J 65/00)

References

Limiting references

This place does not cover:

lamps in which a gas filling or screen or coating is excited to luminesce by radioactive material structurally associated with the lamp	H01J 65/00

Informative references

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

Luminescent substances containing radioactive material	C09K 11/04

G21H 5/00

Applications of radiation from radioactive sources or arrangements therefor, not otherwise provided for

References

References out of a residual place

Examples of places in relation to which this place is residual:

Use of radiation to produce mutations in plants	A01H 1/06
Preserving finished bakery products; improving by irradiation	A21D 15/06
Preservation of meat, sausages, fish, eggs, fruit, vegetables or edible seeds by irradiation causing heating effect	A23B 4/01, A23B 5/01, A23B 7/01, A23B 9/04
Preservation of meat, sausages, fish, eggs, fruit, vegetables or edible seeds by irradiation without heating effect	A23B 4/015, A23B 5/015, A23B 7/015, A23B 9/06
Preservation of milk or milk preparations by irradiation	A23C 3/07

Preservation of food or foodstuffs or non-alcoholic beverages by irradiation without heating	A23L 2/50, A23L 3/26
Medicinal preparations obtained by treating materials with wave energy or particle radiation	A61K 41/00
Preparations containing radioactive substances for use in therapy or testing in vivo	A61K 51/00
Methods or apparatus using radiation for disinfecting or sterilising materials or objects other than foodstuffs or contact lenses	A61L 2/08
Applying radioactive material to the body	A61M 37/00
Radiation therapy; therapy using X-rays, gamma rays or particle-irradiation	A61N 5/00, A61N 5/10
Direct application of radiation to physical, chemical or physico-chemical processes in general	B01J 19/08
Use of radiation for separating dispersed particles from gases or vapour, e.g. air, by electrostatic effect	B03C 3/38
Use of radiation for pre-treatment of surfaces to which liquids or other fluent materials are to be applied, or after-treatment of applied coatings	B05D 3/06
Use of radiation in the working of plastics; after-treatment of articles without altering their shape; apparatus therefor	B29C 71/04
Railway trackside devices actuated by radiation and controlled by interaction with a vehicle or train	B61L 1/10
Railway trackside devices using radiation to control devices on a vehicle or train	B61L 3/06
Polymerisation initiated by wave energy or particle radiation; in addition polymers	C08F 2/46, C08F 2/54, C08G 2/02
Processes for treating or compounding macromolecular substances by wave energy or particle radiation	C08J 3/28
Chemical treatment or coating of shaped articles made of macromolecular substances using wave energy or particle radiation	C08J 7/18
Use of radiation for cracking of hydrocarbon oils	C10G 15/10, C10G 32/04
Use of radiation for reforming naphtha	C10G 35/16
Use of radiation for pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages	C12H 1/06, C12H 1/16
Use of radiation for bleaching fibres, threads, yarns, fabrics, feathers, or made-up fibrous goods, leather or furs	D06L 4/50
Measuring angles, areas, length, thickness or similar dimensions, or irregularities of surfaces or contours, using wave or particle radiation	G01B 15/00
Transducers not specially adapted for a specific variable using wave or particle radiation derived from a radioactive source	G01D 5/50, G01D 5/62
Investigating fluid tightness of structures using radioactive material	G01M 3/20
Investigating or analysing materials by the use of wave or particle radiation	G01N 23/00
Investigating or analysing materials through the ionisation of gases, using wave or particle radiation to ionise a gas	G01N 27/64
Chemical analysis of biological material; immunoassay or bio-specific binding assays involving radioactive-labelled substances	G01N 33/534, G01N 33/60

Geophysics; prospecting or detecting using primary nuclear radiation sources	G01V 5/08
Fire alarms or alarms responsive to explosion, actuated by the presence of smoke or gas detected by an ionisation chamber	G08B 17/11
Irradiation devices	G21K 5/00
Gamma ray or X-ray microscopes	G21K 7/00
In cathode ray tubes, charge-storage screens exhibiting internal electrical effects caused by particle radiation	H01J 29/44
Semiconductor devices sensitive to electro-magnetic or corpuscular radiation	H01L 31/00
Lasers using pumping by high energy nuclear particles	H01S 3/0957
Apparatus for generating ions to be introduced into non-enclosed gasses, e.g. into the atmosphere	H01T 23/00
Carrying off electrostatic charges by means of ionising radiation	H05F 3/06

Informative references

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

Dairy products, making thereof	A23C
Preservation of milk or milk preparations in general, of cream, butter and cheese	A23C 3/00, A23C 13/08, A23C 15/18, A23C 19/097
Organic chemistry, applications of radiation for preparation of organic chemical compounds	C07
Introducing isotopes into organic compounds	C07B 59/00
Measuring	G01

G21H 5/02

as tracers

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Medicinal preparations containing radioactive substances	A61K 51/00

Informative references

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

Investigating or analysing biological material	G01N 33/48