CPC COOPERATIVE PATENT CLASSIFICATION

G21C NUCLEAR REACTORS (analogue computers therefor G06G 7/54; fusion reactors, hybrid fission-fusion reactors G21B; nuclear explosives G21J)

WARNING

The following IPC groups are not used in the CPC scheme:
- G21C 1/01 covered by all other groups of G21C
- G21C 19/33 covered by all other subgroups of G21C 19/34

G21C 1/00	**Reactors**
G21C 1/02	. Fast fission reactors, i.e. reactors not using a moderator; { Metal cooled reactors; Fast breeders}
G21C 1/022	.. {Characterised by the concept and properties of the core}
G21C 1/024	... {where the core is divided in zones with fuel and zones with breeding material}
G21C 1/026	... {Reactors not needing refueling, i.e. reactors of the type breed-and-burn, e.g. travelling or deflagration wave reactors or seed-blanket reactors}
G21C 1/028	.. {cooled by a pressurised coolant (cooling arrangements G21C 15/00)}
G21C 1/03	.. cooled by a coolant not essentially pressurised, e.g. pool-type reactors
G21C 1/04	. Thermal reactors; { Epithermal reactors}
G21C 1/06	.. Heterogeneous reactors, i.e. in which fuel and moderator are separated
G21C 1/07	... Pebble-bed reactors; Reactors with granular fuel
G21C 1/08	... moderator being highly pressurised, e.g. boiling water reactor, integral super-heat reactor, pressurised water reactor (G21C 1/22 takes precedence)
G21C 1/082	.... {Reactors where the coolant is overheated}
G21C 1/084	.... {Boiling water reactors}
G21C 1/086	.... {Pressurised water reactors}
G21C 2001/088	.... {Inherently safe boiling water reactors}
G21C 1/09	.... Pressure regulating arrangements, i.e. pressurisers
G21C 1/10	.... moderator and coolant being different or separated
G21C 1/12	..... moderator being solid, e.g. Magnox reactor {gas-graphite reactor}
G21C 1/14	... moderator being substantially not pressurised, e.g. swimming-pool reactor (G21C 1/22 takes precedence)
G21C 1/16	.... moderator and coolant being different or separated, e.g. sodium-graphite reactor {sodium-heavy water reactor, organic coolant-heavy water reactor}
G21C 1/18	..... coolant being pressurised
G21C 1/20	..... moderator being liquid, e.g. pressure-tube reactor {also the construction of the pressure-tubes}
G21C 1/22	... using liquid or gaseous fuel
G21C 1/24	.. Homogeneous reactors, i.e. in which the fuel and moderator present an effectively homogeneous medium to the neutrons

G21C 1/26	. . .	Single-region reactors
G21C 1/28	. . .	Two-region reactors
G21C 1/30	.	Subcritical reactors; { Experimental reactors with exception of swimming-pool reactors or zero-energy reactors}
G21C 1/303	. .	{Experimental and irradiation arrangements inside the reactor (irradiation loops G21C 1/306; material testing by neutrons G01N 23/005)}
G21C 1/306	. .	{Irradiation loops}
G21C 1/32	.	Integral reactors, i.e. reactors wherein parts functionally associated with the reactor but not essential to the reaction, e.g. heat exchangers, are disposed inside the enclosure with the core (G21C 1/02 to G21C 1/30 take precedence)
G21C 1/322	. .	{wherein the heat exchanger is disposed above the core}
G21C 1/324	. .	{wherein the heat exchanger is disposed beneath the core}
G21C 1/326	. .	{wherein the heat exchanger is disposed next to or beside the core}
G21C 1/328	. .	{wherein the prime mover is also disposed in the vessel}
G21C 3/00		**Reactor fuel elements and their assemblies; Selection of substances for use as reactor fuel elements**
G21C 3/02	.	Fuel elements {(manufacture thereof G21C 21/02)}
G21C 3/04	. .	Constructional details
G21C 3/041	. . .	{Means for removal of gases from fuel elements}
G21C 3/042	. . .	{Fuel elements comprising casings with a mass of granular fuel with coolant passages through them}
G21C 3/044	. . .	{Fuel elements with porous or capillary structure}
G21C 2003/045	. . .	{Pellets}
G21C 2003/047	. . . .	{Pellet-clad interaction}
G21C 2003/048	. . . .	{Shape of pellets}
G21C 3/06	. . .	Casings; Jackets
G21C 3/07	. . . .	characterised by their material, e.g. alloys
G21C 3/08	. . . .	provided with external means to promote heat-transfer, e.g. fins, baffles
G21C 3/10	. . . .	End closures; {Means for tight mounting therefor}
G21C 3/105	. . . . .	{Flattened end-closures}
G21C 3/12	. . . .	Means forming part of the element for locating it within the reactor core {(means not forming part of the element G21C 5/06)}
G21C 3/14	. . . .	Means forming part of the element for inserting it into, or removing it from, the core; Means for coupling adjacent elements, {e.g. to form a stringer}
G21C 3/16	. . .	Details of the construction within the casing
G21C 3/17	. . . .	Means for storage or immobilisation of gases in fuel elements
G21C 3/18	. . . .	Internal spacers or other non-active material within the casing, e.g. compensating for expansion of fuel rods or for compensating excess reactivity (interlayers G21C 3/20)
G21C 3/20	. . . .	with coating on fuel or on inside of casing; with non-active interlayer between casing and active material {with multiple casings or multiple active layers}
G21C 3/22	. .	with fissile or breeder material in contact with coolant

G21C 3/24	..	with fissile or breeder material in fluid form within a non-active casing
G21C 3/26	..	with fissile or breeder material in powder form within a non-active casing
G21C 3/28	..	with fissile or breeder material in solid form within a non-active casing
G21C 3/30	.	Assemblies of a number of fuel elements in the form of a rigid unit
G21C 3/32	..	Bundles of parallel pin-, rod-, or tube-shaped fuel elements
G21C 3/3206	...	{Means associated with the fuel bundle for filtering the coolant, e.g. nozzles, grids}
G21C 3/3213	...	{Means for the storage or removal of fission gases (means for the storage of fission gases in the elements G21C 3/16; means for the removal of fission gases from elements G21C 3/04)}
G21C 3/322	...	Means to influence the coolant flow through or around the bundles
G21C 2003/3225	....	{by waterrods}
G21C 3/324	...	Coats or envelopes for the bundles
G21C 3/3245	....	{made of moderator material}
G21C 3/326	...	comprising fuel elements of different composition; comprising, in addition to the fuel elements, other pin-, rod-, or tube-shaped elements, e.g. control rods, grid support rods, fertile rods, poison rods or dummy rods
G21C 2003/3262	....	{Enrichment distribution in zones}
G21C 2003/3265	.....	{Radial distribution}
G21C 2003/3267	.....	{Axial distribution}
G21C 3/328	....	Relative disposition of the elements in the bundle lattice
G21C 3/33	...	Supporting or hanging of elements in the bundle (spacer grids G21C 3/34); Means forming part of the bundle for inserting it into, or removing it from, the core; Means for coupling adjacent bundles
G21C 3/3305	....	{Lower nozzle}
G21C 3/331	....	{Comprising hold-down means, e.g. springs}
G21C 3/3315	....	{Upper nozzle}
G21C 3/332	....	Supports for spacer grids
G21C 3/334	...	Assembling { , maintenance or repair of} the bundles {(assembling, maintenance or repair of other reactor components G21C 19/207)}
G21C 3/335	...	Exchanging elements in irradiated bundles
G21C 3/336	...	Spacer elements for fuel rods in the bundle (spacer grids G21C 3/34)
G21C 3/338	....	Helicoidal spacer elements
G21C 3/34	...	Spacer grids
G21C 3/3408	....	{Compact spacer grids, e.g. made of a plate or a blade}
G21C 3/3416	....	{Spacer grids formed by metallic wires, e.g. springs}
G21C 3/3424	....	{Fabrication of spacer grids}
G21C 2003/3432	....	{Grids designed to influence the coolant, i.e. coolant mixing function}
G21C 3/344	....	formed of assembled tubular elements
G21C 3/348	....	formed of assembled non-intersecting strips
G21C 3/352	....	formed of assembled intersecting strips
G21C 3/356	....	being provided with fuel element supporting members

G21C 3/3563 ..... {Supporting members formed only by deformations in the strips}

G21C 3/3566 ..... {Supporting members formed only of elements fixed on the strips}

G21C 3/36 .. Assemblies of plate-shaped fuel elements or coaxial tubes

G21C 3/38 . Fuel units consisting of a single fuel element in a supporting sleeve {or in another supporting element}

G21C 3/40 . Structural combination of fuel element with thermoelectric element for direct production of electric energy from fission heat (for temperature measurement G21C 17/10) { or with another arrangement for direct production of electric energy, e.g. a thermionic device (combination with thermoelements for temperature measurements G21C 17/102)}

G21C 3/42 . Selection of substances for use as reactor fuel

G21C 3/44 .. Fluid or fluent reactor fuel

G21C 3/46 ... Aqueous compositions

G21C 3/48 .... True or colloidal solutions of the active constituent

G21C 3/50 .... Suspensions of the active constituent; Slurries

G21C 3/52 ... Liquid metal compositions

G21C 3/54 ... Fused salt, oxide or hydroxide compositions

G21C 3/56 ... Gaseous compositions; Suspensions in a gaseous carrier

G21C 3/58 .. Solid reactor fuel {Pellets made of fissile material}

G21C 3/60 ... Metallic fuel; Intermetallic dispersions

G21C 3/62 ... Ceramic fuel

G21C 3/623 .... {Oxide fuels}

G21C 3/626 .... {Coated fuel particles}

G21C 3/64 .... Ceramic dispersion fuel, e.g. cermet

G21C 5/00 Moderator or core structure; Selection of materials for use as moderator

G21C 5/02 . Details

G21C 5/04 .. Spatial arrangements allowing for Wigner growth

G21C 5/06 .. Means for locating or supporting fuel elements {(means forming part of the element G21C 3/12)}

G21C 5/08 .. Means for preventing undesired asymmetric expansion of the complete structure; {Stretching devices, pins}

G21C 5/10 .. Means for supporting the complete structure {(arrangements for supporting vessels and core-structures G21C 13/024)}

G21C 5/12 . characterised by composition, e.g. the moderator containing additional substances which ensure improved heat resistance of the moderator {(purification of fluid moderators during the operation of the reactor G21C 19/30)}

G21C 5/123 .. {Moderators made of organic materials}

G21C 5/126 .. {Carbonic moderators (carbon and graphite in general C01B 31/00; refractory carbon-bulbs C04B 35/00; carbon electrodes C25B)}

G21C 5/14 . characterised by shape

G21C 5/16 .. Shape of its constituent parts

G21C 5/18 . characterised by the provision of more than one active zone

G21C 5/20 . . wherein one zone contains fissile material and another zone contains breeder material

G21C 5/22 . . wherein one zone is a superheating zone

G21C 7/00 Control of nuclear reaction

G21C 7/005 . {Flux flattening}

G21C 7/02 . by using self-regulating properties of reactor materials, {e.g. Doppler effect }(arrangements that involve temperature stability G21C 7/32)

G21C 7/04 . . of burnable poisons (burnable poisons in fuel rods G21C 3/326)

G21C 7/06 . by application of neutron-absorbing material, i.e. material with absorption cross-section very much in excess of reflection cross-section

G21C 7/08 . . by displacement of solid control elements, e.g. control rods

G21C 7/10 . . . Construction of control elements

G21C 7/103 . . . . Control assemblies containing one or more absorbants as well as other elements, e.g. fuel or moderator elements

G21C 7/107 . . . . Control elements adapted for pebble-bed reactors

G21C 7/11 . . . . Deformable control elements, e.g. flexible, telescopic, articulated

G21C 7/113 . . . . Control elements made of flat elements; Control elements having cruciform cross-section

G21C 7/117 . . . . Clusters of control rods; Spider construction

G21C 7/12 . . . Means for moving control elements to desired position (dropping rods in an emergency G21C 9/02)

G21C 7/14 . . . . Mechanical drive arrangements

G21C 7/16 . . . . Hydraulic or pneumatic drive

G21C 7/18 . . . Means for obtaining differential movement of control elements

G21C 7/20 . . . Disposition of shock-absorbing devices (shock-absorbers in general F16F) {Braking arrangements}

G21C 7/22 . . by displacement of a fluid or fluent neutron-absorbing material, {e.g. by adding neutron-absorbing material to the coolant}

G21C 7/24 . . Selection of substances for use as neutron-absorbing material

G21C 7/26 . by displacement of the moderator or parts thereof {by changing the moderator concentration}

G21C 7/27 . . Spectral shift control

G21C 7/28 . by displacement of the reflector or parts thereof

G21C 7/30 . by displacement of the reactor fuel or fuel elements

G21C 7/32 . by varying flow of coolant through the core {by adjusting the coolant or moderator temperature}

G21C 7/34 . by utilisation of a primary neutron source

G21C 7/36 . Control circuits

G21C 9/00 Emergency protection arrangements structurally associated with the reactor {e.g. safety valves provided with pressure equalisation devices }(emergency cooling arrangements G21C 15/18)

G21C 9/001 . {against explosions e.g. blast shields}

G21C 9/002 . {against Na- or Ka- reactions}

G21C 9/004 . Pressure suppression

G21C 9/008 . . by rupture-discs or -diaphragms

G21C 9/012 . . by thermal accumulation or by steam condensation, e.g. ice condensers

G21C 9/016 . Core catchers

G21C 9/02 . Means for effecting very rapid reduction of the reactivity factor under fault conditions, e.g. reactor fuse; {Control elements having arrangements activated in an emergency }(control elements per se G21C 7/00)

G21C 9/022 . . {Reactor fuses}

G21C 9/024 . . {Rupture diaphragms}

G21C 9/027 . . by fast movement of a solid, e.g. pebbles

G21C 9/033 . . by an absorbent fluid

G21C 9/04 . Means for suppressing fires {Earthquake protection}

G21C 9/06 . . Means for preventing accumulation of explosives gases, e.g. recombiners

G21C 11/00 **Shielding structurally associated with the reactor**

G21C 11/02 . Biological shielding (in general G21F) {Neutron or gamma shielding}

G21C 11/022 . . {inside the reactor vessel}

G21C 11/024 . . . {structurally combined with the casing}

G21C 11/026 . . {in apertures or channels through a wall}

G21C 11/028 . . {characterised by the form or by the material}

G21C 11/04 . . on waterborne craft

G21C 11/06 . Reflecting shields, i.e. for minimising loss of neutrons

G21C 11/08 . Thermal shields; Thermal linings, i.e. for dissipating heat from gamma radiation which would otherwise heat an outer biological shield {Thermal insulation}

G21C 11/081 . . {consisting of a non-metallic layer of insulating material}

G21C 11/083 . . {consisting of one or more metallic layers}

G21C 11/085 . . . {consisting exclusively of several metallic layers}

G21C 11/086 . . {consisting of a combination of non-metallic and metallic layers, e.g. metal-sand-metal-concrete}

G21C 11/088 . . {consisting of a stagnant or a circulating fluid}

G21C 13/00 **Pressure vessels; Containment vessels; Containment in general** (for chemical or physical processes B01J 3/00; pressure vessels in general F16J 12/00)

G21C 13/02 . Details

G21C 13/022 . . {Ventilating arrangements}

G21C 13/024 . . Supporting constructions for pressure vessels or containment vessels

G21C 13/028 . . Seals, e.g. for pressure vessels or containment vessels

G21C 13/0285 . . . {for container apertures}

G21C 13/032 . . Joints between tubes and vessel walls, e.g. taking into account thermal stresses

G21C 13/036 . . . the tube passing through the vessel wall, i.e. continuing on both sides of the wall

G21C 13/04 . . Arrangements for expansion and contraction
G21C 13/06 . . Sealing-plugs (for pressure vessels in general F16J 13/00)
G21C 2013/063 . . . {Seals for closures or for rotatable closures}
G21C 13/067 . . . for tubes, e.g. standpipes; Locking devices for plugs
G21C 13/0675 . . . . {Seals for the plugs}
G21C 13/073 . . . Closures for reactor-vessels, e.g. rotatable
G21C 13/0735 . . . . {Seals for closures or for rotatable closures}
G21C 13/08 . Vessels characterised by the material; Selection of materials for pressure vessels
G21C 13/087 . . Metallic vessels
G21C 13/0875 . . . {Tube-type vessels, e.g. for not essentially pressurised coolants}
G21C 13/093 . . Concrete vessels
G21C 13/0933 . . . {made of prestressed concrete}
G21C 13/0936 . . . . {Particulars concerning prestressing devices and cables}
G21C 13/10 . Means for preventing contamination in the event of leakage, {e.g. double wall}

G21C 15/00 Cooling arrangements within the pressure vessel containing the core; Selection of specific coolants

G21C 15/02 . Arrangements or disposition of passages in which heat is transferred to the coolant; {Coolant flow control devices (G21C 19/04 takes precedence; coolant flow control through fuel assemblies, e.g. flow restrictors G21C 3/322)}
G21C 15/04 . . from fissile or breeder material {(G21C 3/32 takes precedence)}
G21C 15/06 . . . in fuel elements
G21C 15/08 . . from moderating material
G21C 15/10 . . from reflector or thermal shield
G21C 15/12 . . from pressure vessel; from containment vessel
G21C 15/14 . . from headers; from joints in ducts
G21C 15/16 . comprising means for separating liquid and steam (separating in general B01D; steam traps F16D)
G21C 15/18 . Emergency cooling arrangements; Removing shut-down heat
G21C 15/182 . . {comprising powered means, e.g. pumps}
G21C 2015/185 . . . {using energy stored in reactor system}
G21C 2015/187 . . . {using energy from the electric grid}
G21C 15/20 . Partitions or thermal insulation between fuel channel and moderator
G21C 15/22 . Structural association of coolant tubes with headers (joints of tubes in general F16L)
G21C 15/24 . Promoting flow of the coolant (electrodynamic pumps H02K 44/02)
G21C 15/243 . . for liquids
G21C 15/247 . . . for liquid metals
G21C 15/25 . . . using jet pumps
G21C 15/253 . . for gases, e.g. blowers
G21C 15/257 . . using heat-pipes {(in general F28D, F28F)}
G21C 15/26 . . by convection, e.g. using chimneys, using divergent channels

G21C 15/28 . Selection of specific coolants (if serving as the moderator G21C 5/12; compositions per se C09K 5/00; {organic coolants G21C 5/123}); {Additions to the reactor coolants, e.g. against moderator corrosion (purification and regeneration of the reactor coolants G21C 19/30)}

G21C 17/00 **Monitoring; Testing** (measuring in general G01)**; { Maintaining}**

G21C 17/001 . {Mechanical simulators (electrical or magnetic simulators G06G 7/54)}

G21C 17/002 . {Detection of leaks (by testing the coolant or the moderator G21C 17/04)}

G21C 17/003 . Remote inspection of vessels, e.g. pressure vessels

G21C 17/007 . . Inspection of the outer surfaces of vessels

G21C 17/01 . . Inspection of the inner surfaces of vessels

G21C 17/013 . . Inspection vehicles

G21C 17/017 . Inspection or maintenance of pipe-lines or tubes in nuclear installations

G21C 17/02 . Devices or arrangements for monitoring coolant or moderator

G21C 17/021 . . {Solid moderators testing, e.g. graphite}

G21C 17/022 . . for monitoring liquid coolants or moderators

G21C 17/0225 . . . {Chemical surface treatment, e.g. corrosion (corrosion prevention in presence of water from scale removal or by modification of the properties of the liquid C02F 5/00; inhibiting corrosion by adding corrosion inhibitors C23F 11/00)}

G21C 17/025 . . . for monitoring liquid metal coolants {(molten metal sampling in general G01N 1/125)}

G21C 17/0255 . . . . {Liquid metal leaks detection (detecting leaks in pipe-line systems in general F17D 5/00)}

G21C 17/028 . . for monitoring gaseous coolants

G21C 17/032 . . Reactor-coolant flow measuring or monitoring {(measuring volume or mass flow in general G01F)}

G21C 17/035 . . Moderator- or coolant-level detecting devices {(indicating or measuring liquid level in general G01F 23/00)}

G21C 17/038 . . Boiling detection in moderator or coolant

G21C 17/04 . . Detecting burst slugs

G21C 17/041 . . . {characterised by systems for checking the coolant channels, e.g. matrix systems}

G21C 17/042 . . . {Devices for selective sampling, e.g. valves, shutters, rotatable selector valves}

G21C 17/044 . . . {Detectors and metering devices for the detection of fission products}

G21C 17/045 . . . . {Precipitation chambers}

G21C 17/047 . . . . {Detection and metering circuits}

G21C 17/048 . . . {characterised by a special construction of fuel elements, e.g. by a confined "tracer"}

G21C 17/06 . Devices or arrangements for monitoring or testing fuel or fuel elements outside the reactor core, e.g. for burn-up, for contamination (G21C 17/08, G21C 17/10 take precedence; detecting leaking fuel elements during reactor operation G21C 17/04)

G21C 17/063 . . {Burn-up control (G21C 17/066 takes precedence)}

G21C 17/066 . . {Control of spherical elements}

G21C 17/07 . . Leak testing

G21C 17/08 . Structural combination of reactor core or moderator structure with viewing means, e.g. with television camera, periscope, window

G21C 17/10 . Structural combination of fuel element, control rod, reactor core, or moderator structure with sensitive instruments, e.g. for measuring radioactivity, strain

G21C 17/102 . . {the sensitive element being part of a fuel element or a fuel assembly (structural combination with a thermoelectric element for direct production of electrical energy G21C 3/40)}

G21C 17/104 . . Measuring reactivity

G21C 17/108 . . Measuring reactor flux

G21C 17/112 . . Measuring temperature

G21C 17/116 . . Passages or insulators, e.g. for electric cables

G21C 17/12 . . Sensitive element forming part of control element

G21C 17/14 . Period meters

G21C 19/00 Arrangements for treating, for handling, or for facilitating the handling of, fuel or other materials which are used within the reactor, e.g. within its pressure vessel

G21C 19/02 . Details of handling arrangements

G21C 19/04 . . Means for controlling flow of coolant over objects being handled; Means for controlling flow of coolant through channel being serviced, {e.g. for preventing "blow-out"}

G21C 19/06 . . Magazines for holding fuel elements or control elements

G21C 19/065 . . . {Rotatable magazines}

G21C 19/07 . . . Storage racks; Storage pools

G21C 19/08 . . Means for heating fuel elements before introduction into the core; Means for heating or cooling fuel elements after removal from the core

G21C 19/10 . . Lifting devices or pulling devices adapted for co-operation with fuel elements or with control elements (manipulators B25J)

G21C 19/105 . . . with grasping or spreading coupling elements

G21C 19/11 . . . with revolving coupling elements, e.g. socket coupling

G21C 19/115 . . . with latching devices and ball couplings

G21C 19/12 . . Arrangements for exerting direct hydraulic or pneumatic force on fuel element or on control element

G21C 19/14 . characterised by their adaptation for use with horizontal channels in the reactor core

G21C 19/16 . Articulated or telescopic chutes or tubes for connection to channels in the reactor core

G21C 19/18 . Apparatus for bringing fuel elements to the reactor charge area, e.g. from a storage place

G21C 19/19 . Reactor parts specifically adapted to facilitate handling, e.g. to facilitate charging or discharging of fuel elements

G21C 19/20 . Arrangements for introducing objects into the pressure vessel; Arrangements for handling objects within the pressure vessel; Arrangements for removing objects from the pressure vessel

G21C 19/202 . . {Arrangements for handling ball-form, i.e. pebble fuel}

G21C 19/205 . . {Interchanging of fuel elements in the core, i.e. fuel shuffling}

G21C 19/207 . . {Assembling, maintenance or repair of reactor components (G21C 3/334 takes precedence)}

G21C 19/22 . . Arrangements for obtaining access to the interior of a pressure vessel whilst the reactor is operating

G21C 19/24 . . . by using an auxiliary vessel which is temporarily sealed to the pressure vessel

G21C 19/26 . Arrangements for removing jammed or damaged fuel elements or control elements; Arrangements for moving broken parts thereof

G21C 19/28 . Arrangements for introducing fluent material into the reactor core; Arrangements for removing fluent material from the reactor core (pumping coolant G21D)

G21C 19/30 . . with continuous purification of circulating fluent material, e.g. by extraction of fission products {deterioration or corrosion products, impurities, e.g. by cold traps (purification of circulating fluid fuels G21C 19/50; separation in general B01D)}

G21C 19/303 . . . specially adapted for gases (decontamination of gases G21F 9/02)

G21C 19/307 . . . specially adapted for liquids (decontamination of liquids G21F 9/04)

G21C 19/31 . . . . for molten metals

G21C 19/313 . . . . . using cold traps

G21C 19/317 . . . Recombination devices for radiolytic dissociation products

G21C 19/32 . Apparatus for removing radioactive objects or materials from the reactor discharge area, e.g. to a storage place; Apparatus for handling radioactive objects or materials within a storage place or removing them therefrom (disposal of waste material G21F 9/00)

G21C 19/34 . Apparatus or processes for dismantling nuclear fuel, e.g. before reprocessing; { Apparatus or processes for dismantling strings of spent fuel elements }(shielded cells G21F 7/00)

G21C 19/36 . . Mechanical means only

G21C 19/365 . . . Removing cannings or casings from fuel

G21C 19/37 . . . . by separating into pieces both the canning or the casing and the fuel element, e.g. by cutting or shearing

G21C 19/375 . . . Compacting devices, e.g. for fuel assemblies

G21C 19/38 . . Chemical means only

G21C 19/40 . Arrangements for preventing occurrence of critical conditions, e.g. during storage

G21C 19/42 . Reprocessing of irradiated fuel

G21C 19/44 . . of irradiated solid fuel

G21C 19/46 . . . Aqueous processes, {e.g. by using organic extraction means, including the regeneration of these means}

G21C 19/48 . . . Non-aqueous processes

G21C 19/50 . . of irradiated fluid fuel, {e.g. regeneration of fuels while the reactor is in operation}

G21C 21/00 **Apparatus or processes specially adapted to the manufacture of reactors or parts thereof** (in general section B, e.g. B23)

G21C 21/02 . Manufacture of fuel elements or breeder elements contained in non-active casings

G21C 21/04 . . by vibrational compaction or tamping {of fuel in the jacket}

G21C 21/06 . . by {rotatable} swaging{of the jacket around the fuel}

G21C 21/08 . . by a slip-fit cladding process {by crimping the jacket around the fuel}

G21C 21/10 . . by extrusion, drawing, or stretching {by rolling, e.g. "picture frame" technique}

G21C 21/12 . . by hydrostatic or thermo-pneumatic canning {in general by pressing without lengthening, e.g. explosive coating}

G21C 21/14 . . by plating {the fuel} in a fluid

G21C 21/16 . . by casting or dipping techniques

G21C 21/18 . Manufacture of control elements covered by group G21C 7/00

G21C 23/00 Adaptations of reactors to facilitate experimentation or irradiation