H05H PLASMA TECHNIQUE (fusion reactors G21B; ion-beam tubes H01J 27/00; 
magnetohydrodynamic generators H02K 44/08; producing X-rays involving plasma generation 
H05G 2/00); PRODUCTION OF ACCELERATED ELECTRICALLY-CHARGED 
PARTICLES OR OF NEUTRONS (obtaining neutrons from radioactive sources G21, 
e.g. G21B, G21C, G21G); PRODUCTION OR ACCELERATION OF NEUTRAL 
MOLECULAR OR ATOMIC BEAMS (atomic clocks G04F 5/14; devices using stimulated 
emission H01S; frequency regulation by comparison with a reference frequency determined by 
ergy levels of molecules, atoms, or subatomic particles H03L 7/26)

**WARNING**
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

I/00 Generating plasma; Handling plasma
1/006 (Investigating plasma, e.g. degree of ionisation 
(electron temperature)
1/0012 (by using radiation)
1/0018 (Details)
1/0025 (by using photoelectric means  
(H05H 1/0031 - H05H 1/0043 take 
take precedence))
1/0031 (by interferrometry)
1/0037 (by spectrometry (see G01N 3/00))
1/0043 (by using infra-red or ultra-violet radiation)
1/005 (by using X-rays or alpha rays (see 
G01N 23/00))
1/0056 (by using neutrons (see G01N 23/00))
1/0062 (by using microwaves (see G01N 23/223))
1/0068 (by thermal means (see G01N 25/00))
1/0075 (Langmuir probes)
1/0081 (by electric means (see G01N 27/00, G01R))
1/0087 (by magnetic means (see G01N 27/00, G01R))
1/0093 (by acoustic, e.g. ultrasonic means (see 
G01N 29/02))
1/02 Arrangements for confining plasma by electric or magnetic fields; Arrangements for heating plasma 
((G21B 1/00 takes precedence;) electron optics 
H01J)
1/03 (using electrostatic fields)
1/04 (using magnetic fields substantially generated by 
discharge in the plasma)
1/06 (Longitudinal pinch devices)
1/08 (Theta pinch devices, e.g. SCYLLA)
1/10 (using externally-applied magnetic fields only, 
e.g. Q-machines, Yin-Yang, base-ball)
1/105 (using magnetic pumping)
1/11 (using cusp configuration (H05H 1/14 takes 
take precedence))
1/12 (wherein the containment vessel forms a closed 
or nearly closed loop (G21B 1/05 takes 
take precedence))
1/14 (wherein the containment vessel is straight and 
has magnetic mirrors)
1/16 (using externally-applied electric and magnetic 
fields)
1/18 (wherein the fields oscillate at very high 
frequency, e.g. in the microwave range (e.g. 
using cyclotron resonance))
1/20 (Ohmic heating)
1/22 (for injection heating (G21B 1/15 takes 
take precedence))
1/24 (Generating plasma (gas-filled discharge reactors 
H01J 37/32; nuclear fusion reactors G21B 1/00; 
ohmic heating H05H 1/20; injection heating 
H05H 1/22))
1/2406 (Dielectric barrier discharges)
2001/2412 (the dielectric being interposed between the 
 electrodes)
2001/2418 (the electrodes being embedded in the 
dielectric)
2001/2425 (the electrodes being flush with the dielectric)
2001/2431 (Cylindrical electrodes)
2001/2437 (Multilayer systems)
2001/2443 (Flow through, i.e. the plasma fluid flowing in 
a dielectric tube)
2001/245 (Internal electrodes)
2001/2456 (External electrodes)
2001/2462 (Ring electrodes)
2001/2468 (Spiral electrodes)
1/2475 (Acoustic pressure discharge)
2001/2481 (Piezoelectric actuators)
2001/2487 (Mechanical actuators)
2001/2493 (Horns)
1/26 (Plasma torches (metal working with constricted 
arc B23K 10/00, B23K 10/02; metal spraying 
B05B 7/18, B05B 7/20))
1/28 (Cooling arrangements)
H05H

1/30 . . . using applied electromagnetic fields, e.g. high frequency or microwave energy (H05H 1/28 takes precedence)
1/32 . . . using an arc (H05H 1/28 takes precedence)
1/34 . . . Details, e.g. electrodes, nozzles (cf. B23K 9/24)
1/3405 . . . [Arc stabilising or constricting arrangements, e.g. by an additional gas flow (by externally applied magnetic field H05H 1/40; by using powders or liquids H05H 1/42; using coaxial coating fluid H05H 1/341)]
1/341 . . . [using coaxial coating fluid (arc stabilising or constricting arrangements H05H 1/3405; introducing materials into the plasma H05H 1/42)]
2001/3415 . . . [indexing scheme associated with H05H 1/34]
2001/3421 . . . . [transferred arc mode]
2001/3426 . . . [pilot arc]
2001/3431 . . . [coaxial cylindrical electrodes]
2001/3436 . . . [hollow cathode with internal coolant flow]
2001/3442 . . . . [cathode with inserted tip]
2001/3447 . . . [rod-like cathode]
2001/3452 . . . [supplementary electrodes between cathode and anode, e.g. cascade]
2001/3457 . . . [nozzle protection devices]
2001/3463 . . . [oblique nozzle]
2001/3468 . . . [vortex generator]
2001/3473 . . . [safety means]
2001/3478 . . . [geometrical details]
2001/3484 . . . [convergent/divergent nozzle]
2001/3489 . . . [contact starting]
2001/3494 . . . [discharge parameter control]
1/36 . . . . Circuit arrangements (H05H 1/38, H05H 1/40 take precedence)
1/38 . . . . Guiding or centering of electrodes
1/40 . . . . using applied magnetic fields, e.g. for focusing or rotating the arc (cf. B23K 9/08, B23K 9/073)
1/42 . . . . with provisions for introducing materials into the plasma, e.g. powder, liquid (electrostatic spraying, spraying apparatus with means for charging the spray electrically H05B 5/00 [cf. B23K 9/324, B05B 7/22; arc stabilising or constricting arrangements H05H 1/3405; coaxial coating fluid H05H 1/341])
1/44 . . . . using more than one torch
1/46 . . . . using applied electromagnetic fields, e.g. high frequency or microwave energy (H05H 1/26 takes precedence)
2001/4607 . . . [Microwave discharges]
2001/4615 . . . [Surface waves]
2001/4622 . . . [Waveguides]
2001/463 . . . [Antennas or applicators]
2001/4637 . . . [Cables]
2001/4645 . . . [Radiofrequency discharges]
2001/4652 . . . [Inductively coupled]
2001/466 . . . [Electrodes]
2001/4667 . . . [Coiled antennas]
2001/4675 . . . [Capacitively coupled]
2001/4682 . . . . [Associated power generators, e.g. G. Circuits, matching networks]
2001/469 . . . . [Flow through, i.e. the plasma fluid flowing in a non-dielectric vessel]
2001/4692 . . . . [dielectric barrier discharge (H05H 1/2406 takes precedence)]
2001/4695 . . . . [Arc discharge]
2001/4697 . . . . [Glown discharge]
1/48 . . . using an arc (H05H 1/26 takes precedence)
2001/481 . . . . [Corona discharges]
2001/483 . . . . [Pointed electrodes]
2001/485 . . . . [Cylindrical electrodes, e.g. Rotary drums electrodes]
2001/486 . . . . [Filamentary electrodes]
2001/488 . . . . [Segmented electrodes]
1/50 . . . and using applied magnetic fields, e.g. for focusing or rotating the arc
1/52 . . . using exploding wires or spark gaps (H05H 1/26 takes precedence; spark gaps in general H01T)
1/54 . . . Plasma accelerators
3/00 Production or acceleration of neutral particle beams, e.g. molecular or atomic beams
3/02 . . . Molecular or atomic beam generation (charge exchange devices G21K 1/14; polarising devices G21K 1/16; using resonance or molecular beams for analysing or investigating materials G01N 24/002; atomic clock G04F 5/14; beam masers H01S 1/06)
3/04 . . . Acceleration by electromagnetic wave pressure
3/06 . . . Generating neutron beams (targets for producing nuclear reactions H05H 6/00; neutron sources G21G 4/02)
5/00 Direct voltage accelerators; Accelerators using single pulses (H05H 3/06 takes precedence)
5/02 . . . Details (targets for producing nuclear reactions H05H 6/00)
5/03 . . . Accelerating tubes (vessels or containers of electric discharge tubes with improved potential distribution over surface of vessel H01J 5/06; shields of X-ray tubes associated with vessels or containers H01J 35/16)
5/04 . . . energised by electrostatic generators
5/042 . . . . [of the de Graaf type]
5/045 . . . . [High voltage cascades, e.g. Greinacher cascade]
5/047 . . . . [Pulsed generators]
5/06 . . . Multistage accelerators
5/063 . . . . [Tandems]
5/066 . . . . [Onion-like structures]
5/08 . . . Particle accelerators using step-up transformers, e.g. resonance transformers
6/00 Targets for producing nuclear reactions (supports for targets or objects to be irradiated G21K 5/08; preparation of tritium C01B 4/00; targets, e.g. pellets for fusion reactions by laser or charged particles beam injection H05H 1/22)
2006/002 . . . [Windows]
6/005 . . . [Polarised targets (polarising devices, e.g. for obtaining a polarised ion beam G21K 1/16)]
2006/007 . . . [Radiation protection arrangements, e.g. screens]
7/00 Details of devices of the types covered by groups H05H 9/00, H05H 11/00, H05H 13/00
7/001 . [Arrangements for beam delivery or irradiation (irradiation systems per se G21K 5/00)]
7/002 . [for modifying beam trajectory, e.g. gantries]
7/004 . [for modifying beam energy, e.g. spread out Bragg peak devices]
7/005 . [for modifying beam emittance, e.g. stochastic cooling devices, stripper foils]
7/007 . [for focusing the beam to irradiation target]
7/008 . [for measuring beam parameters]
7/02 . [Circuits or systems for supplying or feeding radio-frequency energy (radio-frequency generators H03B)]
7/022 . [Pulsed systems]
7/025 . [Radiofrequency systems]
7/027 . [Microwave systems]
7/04 . [Magnet systems, e.g. undulators, wigglers (free-electron laser H01S 3/0903); Energisation thereof]
7/041 . [for beam bunching, e.g. undulators]
7/043 . [for beam focusing]
7/045 . [for beam bending]
7/046 . [for beam deflection]
7/048 . [for modifying beam trajectory, e.g. gantry systems]
7/06 . [Two-beam arrangements; Multi-beam arrangements (storage rings); Electron rings]
7/065 . [Multi-beam merging, e.g. funneling]
7/08 . [Arrangements for injecting particles into orbits]
7/081 . [Sources]
7/082 . [Ion sources, e.g. ECR, duoplasmatron, PIG, laser sources]
7/084 . [Electron sources]
7/085 . [by electrostatic means]
7/087 . [by magnetic means]
7/088 . [by mechanical means, e.g. stripping foils]
7/10 . [Arrangements for ejecting particles from orbits]
7/12 . [Arrangements for varying final energy of beam]
7/122 . [by electromagnetic means, e.g. RF cavities]
7/125 . [by mechanical means, e.g. stripping foils]
7/127 . [by emittance variation, e.g. stochastic cooling]
7/14 . [Vacuum chambers (H05H 5/03 takes precedence)]
7/16 . [of the waveguide type]
7/18 . [Cavities; Resonators (traveling-wave tubes H01J 23/18; hyperfrequency cavities in general H01P 7/04, H01P 7/06)]
7/20 . [with superconductive walls]
7/22 . [Details of linear accelerators, e.g. drift tubes (H05H 7/02 - H05H 7/20 take precedence)]
7/222 . [Drift tubes]
7/225 . [Coupled cavities arrangements]
7/227 . [Power coupling, e.g. coupling loops]
9/00 . [Linear accelerators]
9/005 . [Dielectric wall accelerators]
9/02 . [Travelling-wave linear accelerators (traveling-wave tubes H01J 25/34)]
9/04 . [Standing-wave linear accelerators]
9/041 . [Hadron LINACS]
9/042 . [Drift tube LINACS]
9/044 . [Coupling cavity LINACS, e.g. side coupled]
9/045 . [Radio frequency quadrupoles]
9/047 . [Hybrid systems]
9/048 . [Lepton LINACS]

H05H

11/00 . Magnetic induction accelerators, e.g. betatrons
11/02 . Air-cored betatrons
11/04 . Biased betatrons
13/00 . Magnetic resonance accelerators; Cyclotrons
13/005 . [Cyclotrons]
13/02 . Synchrocyclotrons, i.e. frequency modulated cyclotrons
13/04 . Synchrotrons
13/06 . Air-cored magnetic resonance accelerators
13/08 . Alternating-gradient magnetic resonance accelerators
13/085 . [Fixed-field alternating gradient accelerators (FFAG)]
13/10 . Accelerators comprising one or more linear accelerating sections and bending magnets or the like to return the charged particles in a trajectory parallel to the first accelerating section, e.g. microtrons

15/00 . Methods or devices for acceleration of charged particles not otherwise provided for

2240/00 . Test
2240/10 . at atmospheric pressure
2240/20 . Non-thermal plasma

2242/00 . Auxiliary systems
2242/10 . Cooling arrangements
2242/1005 . Power supply other than for plasma torches

2245/00 . test
2245/104 . Spiral electrodes
2245/12 . Applications
2245/121 . Treatment of exhaust gas, e.g. Ambient air, ozonizers
2245/1215 . Exhaust gas
2245/122 . Medical applications (e.g. plasma scalpels, blades, bistouri)
2245/1225 . Sterilization of objects
2245/123 . Surface treatments
2245/1235 . Coating of large volume items
2245/124 . Production of nanostructures
2245/125 . Portable devices

2277/00 . Applications
2277/10 . Medical devices
2277/11 . Radiotherapy
2277/113 . Diagnostic systems
2277/116 . Isotope production
2277/12 . Ion implantation
2277/13 . High energy applications, e.g. fusion
2277/14 . Portable devices
2277/1405 . Detection systems