Marie Skłodowska-Curie Actions

List of Descriptors
**Explanation notice:** These descriptors are to be used by applicants in Part A of their proposal in order to best describe the scientific content of their proposal. In the electronic proposal submission system, the descriptors are only available as a long, drop-down list. Therefore the full list is available below in order to ease the selection of the most appropriate descriptors. Please note that only descriptors from the third level can be selected (e.g. 'Physical chemistry').

<table>
<thead>
<tr>
<th>Chemistry (CHE)</th>
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<tbody>
<tr>
<td>Chemistry</td>
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<tr>
<td>Physical chemistry</td>
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<tr>
<td>Nanochemistry</td>
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<tr>
<td>Spectroscopic and spectrometric techniques</td>
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<tr>
<td>Molecular architecture and structure</td>
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<tr>
<td>Surface chemistry</td>
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<tr>
<td>Analytical chemistry</td>
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<tr>
<td>Chemical instrumentation</td>
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<tr>
<td>Electrochemistry, electrodialysis, microfluidics, sensors</td>
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<tr>
<td>Combinatorial chemistry</td>
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<tr>
<td>Method development in chemistry</td>
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<tr>
<td>Physical chemistry of biological systems</td>
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<td>Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions</td>
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<tr>
<td>Theoretical and computational chemistry</td>
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<tr>
<td>Radiation and nuclear chemistry</td>
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<tr>
<td>Photochemistry</td>
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<tr>
<td>Structural properties of materials</td>
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<td>Solid state materials</td>
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<td>Surface modification</td>
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<td>Thin films</td>
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<td>Corrosion</td>
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<td>Porous materials</td>
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<td>Ionic liquids</td>
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<td>New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles</td>
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<td>Materials for sensors</td>
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<td>Nano-materials (production and properties)</td>
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<td>Biomaterials synthesis</td>
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<td>Intelligent materials, self-assembled materials</td>
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<td>Environment chemistry</td>
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<td>Coordination chemistry</td>
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<td>Colloid chemistry</td>
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<td>Biological chemistry</td>
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<td>Chemistry of condensed matter</td>
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<td>Heterogeneous catalysis</td>
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<td>Characterization methods of materials</td>
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<tr>
<td>Macromolecular chemistry</td>
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<td>Polymer chemistry</td>
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<td>Supramolecular chemistry</td>
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<td>Organic chemistry</td>
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<td>Molecular chemistry</td>
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<td>Forensic chemistry</td>
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<td>Heterocyclic chemistry</td>
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<td>Peptide chemistry</td>
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<td>Natural product synthesis</td>
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<td>Translational chemistry</td>
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<td>Medicinal chemistry</td>
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<td>Food chemistry</td>
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**Economic Sciences (ECO)**

*Economics, finance and management*
- Macroeconomics
- Microeconomics
- Econometrics, statistical methods
- Financial markets, asset prices, international finance
- Competitiveness, innovation, research and development
- Natural resources and environmental economics
- Industrial economics
- Behavioural economics
- Organization studies: theory & strategy, industrial organization
- Human resource management
- Research management
- Social economics
- Urban and regional economics
- Public administration
- Public economics
- Labour economics, income distribution and poverty
- International trade
- Economic geography
- Economic history, development

**Information Science and Engineering (ENG)**

*Computer science and informatics*
- Computer architecture, pervasive computing, ubiquitous computing
- Computer systems, parallel/distributed systems, grid, cloud processing systems
- Sensor networks, embedded systems, hardware platforms
- Theoretical computer science, formal methods, quantum computing
- Computer graphics, computer vision, multi media, computer games
- Cognitive science, human computer interaction, natural language processing
- Informatics and information systems
- Artificial intelligence, intelligent systems, multi agent systems
- Ontologies, neural networks, genetic programming, fuzzy logic
- Machine learning, statistical data processing and applications using signal processing (e.g. speech, image, video)
- Scientific computing and data processing
- Numerical analysis, simulation, optimisation, modelling tools, data mining
- Complexity and cryptography, electronic security, privacy, biometrics
- Computational geometry, theorem proving, symbolic, algebraic computations
- Internet and semantic web, database systems and libraries
- Algorithms, distributed, parallel and network algorithms, algorithmic game theory
- Computer games, multi-media, augmented and virtual reality
- e-commerce, e-business, computational finance
- Bioinformatics, e-Health, medical informatics
- e-learning, user modelling, collaborative systems
- Intelligent robotics, cybernetics
- Software engineering, operating systems, computer languages

*Systems and communication engineering*
- Control Engineering
- Electrical and electronic engineering: semiconductors, components, systems
- Simulation engineering and modelling
- Systems engineering, sensorics, actronics, automation
- Electronics, photonics
- Wireless communications, communication, high frequency, mobile technology
- Diagnostic and implantable devices, environmental monitoring
- Signal processing
- Networks (communication networks, sensor networks, networks of robots)
Man-machine-interfaces
Industrial Automation and Robotics, mechatronics

Products and process engineering
Aerospace engineering
Chemical engineering, technical chemistry
Civil engineering, maritime/hydraulic engineering, geotechnics, waste treatment
Transport engineering, intelligent transport systems
Computational engineering and computer aided design
Fluid mechanics, hydraulic-, turbo-, and piston engines
Energy systems, smart energy, smart grids, wireless energy transfer
Energy collection, conversion and storage, renewable energy
Optical engineering, photonics, lasers
Micro (system) engineering
Mechanical and manufacturing engineering (shaping, mounting, joining, separation)

Materials engineering
Nanotechnology, nano-materials, nano engineering
Production technology, process engineering
Industrial design (product design, ergonomics, man-machine interfaces)
Sustainable design (for recycling, for environment, eco-design)
Lightweight construction, textile technology
Industrial bioengineering
Architecture, smart buildings, smart cities, urban engineering
Agricultural engineering, food safety
Geological engineering, geophysical engineering, mining, geotechnics
Microfluidics
Medical engineering, biomedical engineering and technology
Geographical and positioning technologies, satellites
Critical infrastructure, emergency systems, security, safety engineering
Certification, Verification, Validation, Technical Compliance, Standards
Logistics, supply chain management, operational research

Environmental and Geosciences (ENV)

Environment and society
Environment, resources and sustainability
Environmental regulations and climate negotiations
Social and industrial ecology
Geographical information systems, cartography
Spatial and regional planning
Population dynamics
Urbanization and urban planning, cities
Mobility and transportation

Earth system science
Atmospheric chemistry, atmospheric composition, air pollution
Meteorology, Atmospheric physics and dynamics
Climatology and climate change
Terrestrial ecology, land cover change
Geology, tectonics, volcanology
Paleoclimatology, paleoecology
Physics of earth's interior, seismology, volcanology
Oceanography
Biogeochemistry, biogeochemical cycles, environmental chemistry
Mineralogy, petrology, igneous petrology, metamorphic petrology
Geochemistry, crystal chemistry, isotope geochemistry, thermodynamics
Sedimentology, soil science, palaeontology, earth evolution
Physical geography
Earth observations from space/remote sensing
Geomagnetism, paleomagnetism
Ozone, upper atmosphere, ionosphere
Hydrology, water and soil pollution
Water management
Natural Resources Exploration and Exploitation
Pollution (water, soil), waste disposal and treatment
Environmental engineering and geotechnics

Evolutionary, population and environmental biology
Animal behaviour
Biodiversity, comparative biology
Biogeography, macro-ecology
Conservation biology, ecology, genetics
Ecology
Environmental and marine biology
Environmental toxicology at the population and ecosystems level
Population biology, population dynamics, population genetics
Systems evolution, biological adaptation, phylogenetics, systematics, comparative biology

Agricultural, animal, fishery, forestry and food science
Agriculture related to animal husbandry, dairying, livestock raising
Aquaculture, fisheries
Agriculture related to crop production, soil biology and cultivation, applied plant biology
Food sciences
Agroindustry
Forestry, biomass production (e.g. for biofuels)
Environmental biotechnology, bioremediation, biodegradation
Applied biotechnology (non-medical), bioreactors, applied microbiology
Biomimetics
Biohazards, biological containment, biosafety, biosecurity

Life Sciences (LIF)

Molecular and Structural Biology and Biochemistry
Molecular biology and interactions
General biochemistry and metabolism
DNA synthesis, modification, repair, recombination and degradation
RNA synthesis, processing, modification and degradation
Protein synthesis, modification and turnover
Biophysics
Structural biology
Biochemistry and molecular mechanisms of signal transduction

Genetics, Genomics, Bioinformatics and Systems Biology
Genomics, comparative genomics, functional genomics
Transcriptomics
Proteomics
Metabolomics
Glycomics
Molecular genetics, reverse genetics and RNAi
Quantitative genetics
Epigenetics and gene regulation
Genetic epidemiology
Bioinformatics
Computational biology
Biostatistics
Systems biology
Biological systems analysis, modelling and simulation

Cellular and Developmental Biology
Morphology and functional imaging of cells
Cell biology and molecular transport mechanisms
Cell cycle and division
Apoptosis
Cell differentiation, physiology and dynamics
Organelle biology
Cell signalling and cellular interactions
Signal transduction
Animal-related development, development genetics, pattern formation and embryology
Plant-related development, development genetics, pattern formation and embryology
Cell genetics
Stem cell biology

Physiology, Pathophysiology and Endocrinology
Organ physiology and pathophysiology
Comparative physiology and pathophysiology
Endocrinology
Ageing
Metabolism, biological basis of metabolism related disorders
Cancer and its biological basis
Cardiovascular diseases
Non-communicable diseases (except for neural/psychiatric, immunity-related, metabolism-related disorders, cancer and cardiovascular diseases)

Neurosciences and neural disorders
Neuroanatomy and neurophysiology
Molecular and cellular neuroscience
Neurochemistry and neuropharmacology
Sensory systems (e.g. visual system, auditory system)
Mechanisms of pain
Developmental neurobiology
Cognition (e.g. learning, memory, emotions, speech)
Behavioural neuroscience (e.g. sleep, consciousness, handedness)
Systems neuroscience
Neuroimaging and computational neuroscience
Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease)
Psychiatric disorders (e.g. schizophrenia, autism, Tourette's syndrome, obsessive compulsive disorder, depression, bipolar disorder, attention deficit hyperactivity disorder)

Immunity and infection
Innate immunity and inflammation
Adaptive immunity
Phagocytosis and cellular immunity
Immunosignalling
Immunological memory and tolerance
Immunogenetics
Microbiology
Virology
Parasitology
Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide)
Biological basis of immunity related disorders
Veterinary medicine and infectious diseases in animals

Diagnostic tools, therapies and public health
Medical engineering and technology
Diagnostic tools (e.g. genetic, imaging)
Pharmacology, pharmacogenomics, drug discovery and design, drug therapy
Gene therapy, cell therapy, regenerative medicine
Surgery
Radiation therapy
Health services, health care research
Public health and epidemiology
Environment and health risks, occupational medicine
Medical ethics
Medical pathology

Applied life sciences
- Prokaryotic biology
- Symbiosis
- Applied genetic engineering, transgenic organisms, recombinant proteins, biosensors
- Synthetic biology, chemical biology and new bio-engineering concepts

**Mathematics (MAT)**

Mathematics
- Logic and foundations
- Algebra
- Number theory
- Algorithms and complexity
- Algebraic and complex geometry
- Geometry
- Topology
- Lie groups, Lie algebras
- Analysis
- Operator algebras and functional analysis
- ODE and dynamical systems
- Theoretical aspects of partial differential equations
- Mathematical physics
- Probability and statistics
- Discrete mathematics and combinatorics
- Mathematical aspects of computer science
- Numerical analysis and scientific computing
- Control theory and optimization
- Application of mathematics in sciences

**Physics (PHY)**

Fundamental constituents of matter
- Fundamental interactions and fields
- Particle physics
- Nuclear physics
- Nuclear astrophysics
- Gas and plasma physics
- Electromagnetism
- Atomic, molecular physics
- Quantum optics and quantum information
- Lasers, ultra-short lasers and laser physics
- Acoustics
- Relativity
- Classical physics
- Thermodynamics
- Non-linear physics
- General physics
- Metrology and measurement
- Statistical physics (gases)

Condensed matter physics
- Structure of solids and liquids
- Mechanical and acoustical properties of condensed matter, Lattice dynamics
- Thermal properties of condensed matter
- Transport properties of condensed matter
- Electronic properties of materials and transport
- Semiconductors
- Superconductivity
Superfluids  
Spintronics  
Magnetism and strongly correlated systems  
Nanophysics: nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics  
Mesoscopic physics  
Molecular electronics  
Soft condensed matter  
Fluid dynamics (physics)  
Statistical physics (condensed matter)  
Phase transitions, phase equilibria  

**Universe sciences**  
Astronomy (including astrophysics, space science)  
Surface science and nanostructures  
Chemical physics  
Medical physics  
Surface physics  

### Social Sciences and Humanities (SOC)  

**Sociology, social anthropology, political science, law, communication**  
Social structure, inequalities, social mobility, interethnic relations  
Ageing, work, social policies  
Kinship, cultural dimensions of classification and cognition, identity, gender  
Myth, ritual, symbolic representations, religious studies  
Ethnography  
Globalization, migration, interethnic relations  
Transformation of societies, democratization, social movements  
Human and social geography  
Political systems and institutions, governance  
Legal systems, constitutions, foundations of law  
Private, public and social law  
Global and transnational governance, international law, human rights  
Communication networks, media, information society  
Social studies of science and technology  
History of science and technology  

**Cognition, psychology, linguistics, philosophy and education**  
Evolution of mind and cognitive functions, animal communication  
Human life-span development  
Neuropsychology and cognitive psychology  
Clinical and experimental psychology  
Formal, cognitive, functional and computational linguistics  
Typological, historical and comparative linguistics  
Psycholinguistics and neurolinguistics: acquisition and knowledge of language, language pathologies  
Use of language: pragmatics, sociolinguistics, discourse analysis, second language teaching and learning, lexicography, terminology  
Language pathologies, lexicography  
Philosophy, history of philosophy  
Epistemology, logic, philosophy of science  
Ethics and morality, bioethics  
Education: systems and institutions, teaching and learning  
Education policy  

**Literature, arts, music, cultural and comparative studies**  
Classics, ancient Greek and Latin literature and art  
History of literature  
Literary theory and comparative literature, literary styles  
Textual philology, palaeography and epigraphy  
Visual arts, performing arts, design  
Museums and exhibitions
Numismatics, epigraphy
Music and musicology, history of music
History of art and architecture
Cultural studies, cultural diversity
Cultural memory, intangible cultural heritage

Archaeology, history and memory
Archaeology, archaeometry, landscape archaeology
Prehistory and protohistory
Ancient history
Medieval history
Modern and contemporary history
Colonial and post-colonial history, global and transnational history, entangled histories
Military history
Historiography, theory and methods of history
History of ideas, intellectual history, history of sciences and techniques
Social, economic, cultural and political history
Collective memories, identities, lieux de mémoire, oral history
Cultural heritage, cultural memory