

Call topics

The FLAG-ERA JTC 2017 comprises two topics, one for each Flagship. The Graphene part of the call is sub-divided into two sub-calls, one for basic research and one for applied research and innovation. The sub-calls covers a specific list of research areas listed below.

Graphene (Basic research)

1. Synthesis and characterization of Layered Materials (LMs) beyond graphene
2. Large scale production of heterostructures based on LMs
3. Vertical and lateral epitaxy of Graphene and Related Materials (GRMs) for optoelectronics
4. Functional ceramics incorporating GRMs
5. Inks for printing stable, GRM-based, semiconducting thin films
6. Modelling charge and heat transport in GRM-based composites
7. Ecotoxicology of GRMs
8. Nanofluidics using GRMs
9. Novel device concepts based on GRMs for quantum communication
10. Beyond CMOS switches and new computing paradigms based on GRMs

Graphene (Applied research and innovation)

1. In-situ and ex-situ quality control of GRMs
2. Controlling doping in high quality large-area graphene
3. GRMs for smart textiles
4. Functional coatings using GRMs
5. GRMs for corrosion prevention and as lubricants
6. GRMs for thermal management and thermoelectrics
7. Biorecognition of specific disease markers using GRMs
8. Highly selective gas sensors based on GRMs
9. GRM-based bioelectronic technologies

The Human Brain Project part of the call addresses both basic and applied research and consists of one sub-call. The thematic research areas to be considered for this call are also mentioned below.

HBP (Basic and applied research)

1. Human brain intracranial data and their relationship to other aspects of brain organisation
2. Comparing morphology and physiology of cortical cell types in human and non-human primates
3. Comparative aspects of brain function and connectivity
4. Cross-species multi-scale data constraints for visuo-motor integration
5. The neural bases of spatial navigation and episodic memory
6. Models of auditory processing
7. Dynamics and representation in multi-level systems of human cognitive functions
8. Modelling dendrites within active networks
9. Testing predictive coding and attractor network models
10. Biological deep Learning
11. Disease modelling and simulation
12. Innovative modelling for allosteric drug discovery

13. Integration of simulation tools, neuromorphic computing and robotics with brain and behavioural studies for developing next-generation brain-computer interfaces
14. Text mining of cellular, synaptic, connectomic or functional properties of the brain