**FOUNDATIONS FOR TOMORROW’S INDUSTRY**

* 1. **OPEN INNOVATION HUBS**

 **DT-NMBP-01-2018: Open Innovation Hubs for Lightweight nano-enabled multifunctional composite materials and components**

 **DT-NMBP-02-2018: Open Innovation Hubs for Safety Testing of Medical Technologies for Health**

 **DT-NMBP-03-2019: Open Innovation Hubs for nano-enabled surfaces and membranes**

 **DT-NMBP-04-2020: Open Innovation Hubs for bio-based nano-materials and solutions**

 **DT-NMBP-05-2020: Open Innovation Hubs for functional materials for building envelopes**

 **DT-NMBP-06-2020: Open Innovation Hubs for nano-pharmaceuticals production**

* 1. **MATERIALS CHARACTERISATION AND COMPUTATIONAL MODELLING**

**DT-NMBP-07-2018: Open Innovation Hubs for Characterisation**

**DT-NMBP-08-2019: Real-time nano-characterisation technologies**

**DT-NMBP-09-2018: Accelerating the uptake of materials modelling software**

**DT-NMBP-10-2019: Translation of manufacturing problems into materials modelling**

**DT-NMBP-11-2020: Open Innovation Hubs for Materials Modelling**

**DT-NMBP-12-2019: Sustainable Nano-Fabrication (CSA)**

* 1. **GOVERNANCE, SCIENCE-BASED RISK ASSESSMENT AND REGULATORY ASPECTS**

 **NMBP-13-2018: Risk Governance of nanotechnology**

 **NMBP-14-2018: Nanoinformatics: from materials models to predictive toxicology and ecotoxicology**

 **NMBP-15-2019: Safe by design, from science to regulation: metrics and main sectors**

 **NMBP-16-2020: Safe by design, from science to regulation: behaviour of multi-component nanomaterials**

 **NMBP-17-2020: Regulatory science for medical technology products**

**TRANSFORMING EUROPEAN INDUSTRY**

**2.1. FACTORIES OF THE FUTURE (FOF)**

**DT-FoF-01-2018: Skills needed for new Manufacturing jobs (CSA)**

**DT-FoF-02-2018: Effective Industrial Human-Robot Collaboration**

**DT-FoF-03-2018: Innovative manufacturing of opto-electrical parts**

**DT-FoF-04-2018: Pilot lines for metal Additive Manufacturing (IA 50%)**

**DT-FoF-05-2019: Open Innovation for collaborative production engineering**

**DT-FoF-06-2019: Refurbishment and re-manufacturing of large industrial equipment**

**DT-FoF-07-2020: Reliable and accurate assembly of micro parts**

**DT-FoF-08-2019: Pilot lines for modular factories (IA 50%)**

**DT-FoF-09-2020: Holistic energy-efficient factory management**

**DT-FoF-10-2020: Pilot lines for large-part high-precision manufacturing (IA 50%)**

**DT-FoF-11-2020: Quality control in smart manufacturing**

**DT-FoF-12-2019: Handling systems for flexible materials**

**DT-NMBP-18-2019: Materials, manufacturing processes and devices for organic and large area electronics**

**DT-NMBP-19-2019: Advanced materials for additive manufacturing**

**DT-NMBP-20-2018: A digital 'plug and produce' online equipment platform for manufacturing**

**2.2 BIOTECHNOLOGY**

**BIOTEC-01-2018: Standardisation in Synthetic Biology (CSA)**

**BIOTEC-02-2019: Boosting the efficiency of photosynthesis**

**BIOTEC-03-2018: Synthetic biology to expand diversity of nature's chemical production**

**CE-BIOTEC-04-2018: New biotechnologies for environmental remediation**

**CE-BIOTEC-05-2019: Microorganism communities for plastics bio-degradation**

**BIOTEC-06-2020: Reprogrammed microorganisms for biological sensors**

**BIOTEC-07-2020: Multi-omics for the optimisation of genotype-phenotype associations**

**2.3. MEDICAL TECHNOLOGY INNOVATIONS**

**NMBP-21-2020: Custom-made biological scaffolds for specific tissue regeneration and repair**

**NMBP-22-2018: Osteo-articular tissues regeneration**

**DT-NMBP-23-2020: Next generation organ-on-chip**

**INDUSTRIAL SUSTAINABILITY**

**3.1. SUSTAINABLE PROCESS INDUSTRY (SPIRE)**

 **CE-SPIRE-01-2020: Industrial symbiosis**

 **CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources**

 **CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries (IA 50%)**

 **CE-SPIRE-04-2019: Efficient integrated downstream processes**

 **CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting (IA 50%)**

 **DT-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants**

 **CE-SPIRE-07-2020: Recovery of industrial water, thermal energy and substances contained therein**

 **CE-SPIRE-08-2020: Improved Industrial Processing using novel high-temperature resistant materials**

 **CE-SPIRE-09-2020: Making the most of mineral waste, by-products and recycled material as feed for high volume production**

 **CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials**

**3.2. CATALYSING THE CIRCULAR ECONOMY**

**CE-NMBP-24-2018: Catalytic transformation of hydrocarbons**

**CE-NMBP-25-2019: Photocatalytic synthesis**

**CE-NMBP-26-2018: Smart plastic materials with intrinsic recycling properties by design**

**3.3. CLEAN ENERGY THROUGH INNOVATIVE MATERIALS**

 **LC-NMBP-27-2019: Strengthening EU materials technologies for non-automotive battery storage**

 **LC-NMBP-28-2020: Advanced materials for innovative multilayers for durable photovoltaics**

 **LC-NMBP-29-2019: Materials for non-battery based energy storage**

 **LC-NMBP-30-2018: Materials for future highly performant electrified vehicle batteries**

 **LC-NMBP-31-2020: Materials for off shore energy**

 **LC-NMBP-32-2019: Smart materials, systems and structures for energy harvesting**

**3.4. CULTURAL HERITAGE**

 **NMBP-33-2018: Innovative and affordable solutions for the preventive conservation of cultural heritage**

**3.5. ENERGY-EFFICIENT BUILDINGS (EEB)**

**LC-EeB-01-2019: Integration of energy smart materials in non-residential buildings**

**LC-EeB-02-2018: Building information modelling adapted to efficient renovation**

**LC-EeB-03-2019: New developments in plus energy houses**

**LC-EeB-04-2020: Industrialisation of building envelope for the renovation market**

**LC-EeB-05-2019-20: Integrated storage systems for residential buildings**

**LC-EeB-06-2018-20: ICT enabled, sustainable and affordable residential building construction, design to end of life**