Application	Basic Principles	Technology Concept	Proof of Concept	Prototype	Validation
Electronics	Wireless machine-brain interface				*Vision and other applications*
	Visible light positioning - highly accurate receiving module			*Indoor positioning*	
	Non-silicon based low energy transistors	*Dirac semi-metal for modulating charge*			
	Ultralight motor for UAV	*Drones*			
Energy	Ammonia production process			*New, cost effective methodology*	
IT	Electrical grid fault location - single sensor detection			*Rapid and precise fault detection*	
	Ultra-reliable low latency communication method			*5G short-distance, real-time interactions*	
	Optimised base station telecommunication system			*5G mobile large volume communication*	
	3D slicer and viewer for augmented reality		*Precise interaction*		
Materials	Magnetic alloys with high induction				*Lightweight motors*
	Metallic conductive ink			*Wearable technologies*	
	Conductive, transparent organic-metal material with strong adhesion			*Liquid or gas purification; catalyst*	
	Nanowire-based pressure sensors with strain-insensitivity				
	Fixed polymer morphology for delivery of active ingredients			*Drug delivery*	
	In situ regenerable active carbon monoliths			*Liquid or gas purification; catalyst*	
	Graphene dispersal in polymers			*Thermal and electrical conductivity*	
	Corrosion protection of steel			*Graphene coating*	
	Metallurgical coal alternative		*Modified brown coal with properties similar to coke*		
	Cyrene™ polymers with high thermal stability and rigidity / hardness		*Use in coatings*		
	Ultra-thin water-stable metal-organic framework		*Ion separation membranes*		
	Photo-reusable adhesives		*Labels*		
	Composite membrane for lithium separation		*Lithium production*		
Measurement / Analytics	Detection of fumigation agents			*Personal protection*	
	Controlled delivery of ultrasound contrast agents			*Ultrasound detection*	
	Paper-based isolation of particles using surface acoustic waves		*Particle separation of cells (medtech)*		
	Multi-spectral imaging sensor		*Distance / motion / night-sensing*		
Processing / Microfluidics	Encapsulation technology for metal extraction / PFAS		*E-waste, controlled delivery / release / recovery*		
	Encapsulation technology for agtech		*Controlled delivery / release*		
	Continuous filtration system		*Scalable separation - nanoparticles, exosomes and biological samples*		
Application	Basic Principles	Technology Concept	Proof of Concept	Prototype	Validation

DEVELOPMENT PHASE - TECHNOLOGY READINESS LEVELS 1-5 (OF 9):

1. **BASIC PRINCIPLES:** Basic principles observed and reported. Transition from scientific research to applied research.
2. **TECHNOLOGY CONCEPT:** Technology concept and/or application formulated – applied research.
3. **PROOF OF CONCEPT:** Technology concept and/or application formulated.
4. **WORKING PROTOTYPE:** Component/subsystem validation in laboratory environment: Standalone prototyping implementation and test.
5. **VALIDATION:** System/subsystem/component validation in relevant environment: Thorough testing of prototyping in representative environment.

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