The Innovative Advanced Materials Initiatives

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WORKING GROUPS

WG #1

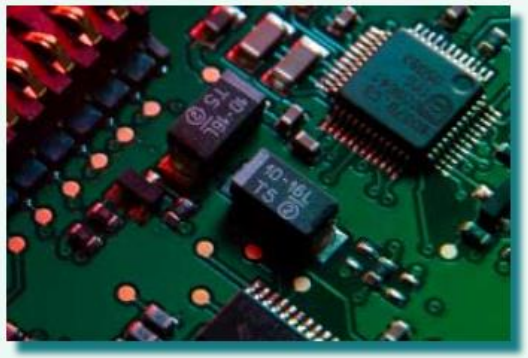
Materials Digitalisation Across the Value Chain

WG #2

Resilient and Circular Value Chains

WG #3

Working Group on Construction



WG #4

Working Group on Electronics

WG #5

Working Group on Energy

WG #6

Working Group on Mobility

WG #7

Working Group on Health

TASK FORCES

TF #1

Education & Workforce

TF #2

Standards & Norms

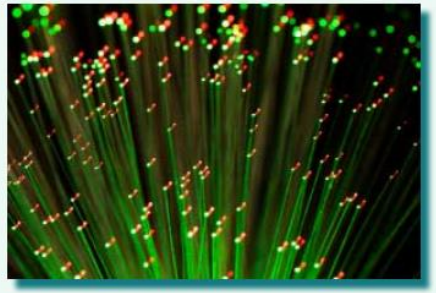
TF #3

Infrastructures, support to SMEs & Upscaling

TF #4

Policies, Funding & Strategy beyond Horizon Europe

Policy-driven Working Groups



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Materials Digitalisation Across the Value Chain

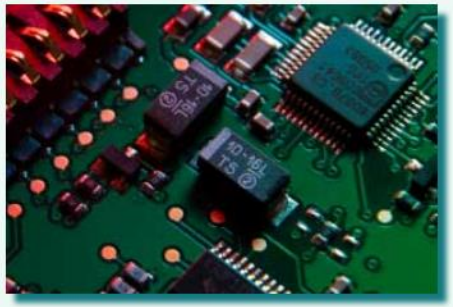
WG #2

Resilient and Circular Value Chains

Application-driven Working Groups

WG #3

Working Group on Construction



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WG #4

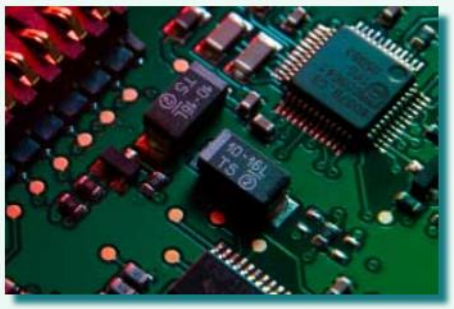
Working Group on Electronics

This WG supports innovation in the electronics sector by focusing on the development and deployment of advanced materials tailored to meet the demands of rapidly evolving technologies. It addresses challenges related to **miniaturisation**, **thermal management**, **performance**, **reliability**, and the environmental footprint of **electronic components and systems**. The WG explores advanced materials for next-generation semiconductors, flexible electronics, quantum devices, and sustainable alternatives to critical raw materials. It also fosters collaboration between **materials scientists, device manufacturers, and digital technology developers** to accelerate the design-to-manufacturing pipeline and support the EU's **strategic autonomy in key electronic technologies**.

Semiconductor Device, Power & Integrated Electronics

High Frequency & Photonic Systems

Distributed and Non-classical Systems



WG #4

Working Group on Electronics

AG meetings / AG + AD meetings (monthly)

WG leaders + Associate Delegates

Lead
(*Roberto Sabella*, Ericsson)

Co-lead
(*Andrea Capasso*, INL)

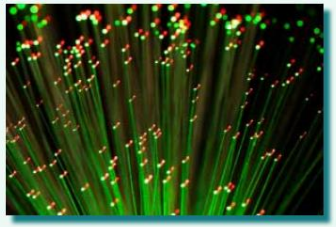
Technical Advisor
(*Alessandro Molle*, CNR)

WG meeting (monthly)

WG Members

- Common Policies and Decisions
- Timing
- Strategies

- Technical Discussion & Contents
- Topical speech
- Strategic fields / Strategic technology applications
- Contribute to **Strategic Research & Innovation Deployment Agenda (SRIDA)**



WG #1

Materials Digitalisation Across the Value Chain

Lead (INDUSTRY member)
Thomas Exner
Seven Past Nine

Co-Lead (RESEARCH member)
Peter Klein
Fraunhofer-Gesellschaft

Technical Advisor (either)
Tejs Vegge
DTU

WG #2

Resilient and Circular Value Chains

Lead (INDUSTRY member)
Vasilios Bakolas
Schaeffler Technologies AG & Co. KG

Co-Lead (RESEARCH member)
Paul Van Den Heuvel
TNO – Brightlands Materials Center

Technical Advisor (either)
Maria Llàcer Llàcer
AIMPLAS

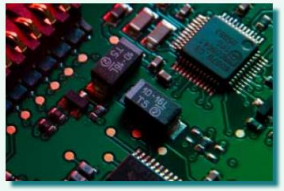
WG #3

Working Group on Construction

Lead (INDUSTRY member)
Maddalena Rostagno
GAE Engineering

Co-Lead (RESEARCH member)
Javier García Jaca
TECNALIA

Technical Advisor (either)
Gaute Gruben
SINTEF



WG #4

Working Group on Electronics

WG #5

Working Group on Energy

Lead (INDUSTRY member)
Ali Shaygan Nia (FORMER)
Elbe Cell Technology

Co-Lead (RESEARCH member)
Vito Di Noto
University of Padova

Technical Advisor (either)
Pekka Pohjanne
VTT Technical Research Centre of Finland

WG #6

Working Group on Mobility

Lead (INDUSTRY member)
Nicola Piccirelli
SAFRAN

Co-Lead (RESEARCH member)
Elena Jubete
Fundación CIDETEC

Technical Advisor (either)
Carlo Antonini
University of Milano-Bicocca

WG #7

Working Group on Health

Lead (INDUSTRY member)
Marco Antonio Agosto
AREAVISIONTECH

Co-Lead (RESEARCH member)
Giulio Cerullo
Politecnico Milano

Technical Advisor (either)
Erika Györvary
CSEM

WG#3-7 - Strategic Technologies (enabled by advanced materials)

CONSTRUCTION	ELECTRONICS	ENERGY	MOBILITY	HEALTH
• Building Structures for Integrity and Performance • Building Envelopes, Resilience & Fire Protection • Sustainable Construction	• Semiconductor Devices, Power & Integrated Electronics • High-frequency & Photonic Systems • Distributed and non-classical systems	• Renewable Energy Generation & Conversion • Energy Storage • Integrated Energy Systems & Infrastructure	• Next-Generation Propulsion & Power Systems for Mobility • Thermal Management & Cooling Systems for Mobility • High-Performance Components & Structures for Mobility	• Health Protection Technologies • Precision Technologies against diseases • Resilient Healthcare Systems

TRANSVERSAL

- Advanced Manufacturing, Processing & Circularity
- Surfaces, Coatings & Interfaces
- Monitoring, Diagnostics & Predictive Maintenance

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WG#3-7 - Strategic Technologies Fields (1/2)

BUILDING STRUCTURES FOR INTEGRITY AND PERFORMANCE

Design, materials and construction solutions ensuring structural integrity, durability and high environmental performance of buildings and infrastructures.

- **Structural Safety & Risk Mitigation**
  (Seismic design, extreme loads, impact and blast resistance, robustness against progressive collapse, dual - use, wind, flood)
- **Structural Materials & Construction Systems** (building materials ready for modular and prefabricated systems)
- **Climate adaptation of Buildings**
  (climate adaptation strategies)

BUILDING ENVELOPES, RESILIENCE & FIRE PROTECTION

Technologies and methods to ensure safety and resilience of buildings under normal and extreme conditions.

- **Advanced Building Envelopes**
  (High performance façades, thermal and acoustic insulation, airtightness, adaptive and multifunctional envelopes)
- **Fire Protection & Fire-Resistant Construction**
  (Fire-safe materials, passive and active fire protection systems, fire behaviour and modelling)
- **Durability, Ageing & Lifecycle Performance**
  (building degradation, corrosion, fatigue, maintenance strategies, resilient construction concepts)

SUSTAINABLE CONSTRUCTION

Integration of sustainable construction processes to enable low-carbon, energy-efficient and smart buildings.

- **Industrialization**
  (on - site/off-site production)
- **Energy Efficient Buildings**
  (resource & energy efficiency, smart operation and multifunctional performance)
- **Circular approaches for material design**
  (design for deconstruction, design for disassembly, remanufacuring)

SEMICONDUCTOR DEVICES, POWER & INTEGRATED ELECTRONICS

- **Logic and memory semiconductor devices**
  (including logic gates, memories)
- **Advanced Interconnects, interfaces, packaging and heterogeneous integration**
  (including BEOL interconnects, advanced packaging, thermal management, heterogeneous/3D integration)
- **Wide bandgap power semiconductors and modules**
  (including wide/ultra-wide bandgap power semiconductors)

HIGH-FREQUENCY & PHOTONIC SYSTEMS

- **Analog, RF, microwave and terahertz electronics**
  (including RF/microwave platforms, THz and sub-THz devices, high-Q filters and tunable materials)
- **Integrated photonics and optoelectronic components**
  (including graphene & 2D materials, heterogeneous photonic integration, AR/VR optical components, optical sources, detectors, modulators and array of transceivers, meta optics)
- **Electronic-photonic co-integration and advanced packaging**
  (linking photonics with electronics, packaging, reliability and system-level integration)

DISTRIBUTED AND NON-CLASSICAL SYSTEMS

- **Flexible/printable/conformal electronics platforms and low-power electronics**
  (including printable materials and inks, stretchable electronics, IoT, sensing, low-temperature manufacturing)
- **AI, neuromorphic and in-memory computing devices and hardware**
  (including AI hardware materials, neuromorphic and memristive devices, ferroelectric devices)
- **Quantum and spin-based technologies for information and sensing**
  (including qubits, quantum photonics, MTJ-based devices, metrology, THz spin technologies)

RENEWABLE ENERGY GENERATION & CONVERSION

Primary energy harvesting from renewable sources and direct conversion to usable energy carriers.

- **Solar & Light-Based Energy Conversion**
  (Photovoltaics, photo-electrochemical systems, solar fuels)
- **Renewable Electricity & Power Electronics**
  (Wind, hydro, marine, power conversion, inverters, grid-forming electronics)
- **Renewable-to-X Energy Conversion**
  (Electricity-to-hydrogen, electricity-to-fuels, synthetic energy carriers)

ENERGY STORAGE

Storage across time scales, capacities, and energy vectors.

- **Electrochemical Energy Storage**
  (Batteries for embedded, mobility, stationary and grid-scale applications)
- **Thermal & Hybrid Energy Storage**
  (Low- and high-temperature thermal storage, electro-thermal hybrids)
- **Chemical & Molecular Energy Storage**
  (Hydrogen storage, liquid fuels, solid carriers, reversible chemistry)

INTEGRATED ENERGY SYSTEMS & INFRASTRUCTURE

System-level integration, distribution, and intelligent operation of energy technologies.

- **Hydrogen & Energy Carrier Infrastructure**
  (Transport, distribution, refuelling, pipelines, conditioning)
- **Smart, Distributed & Grid-Integrated Energy Systems**
  (Embedded storage, IoT, edge devices, microgrids, grid interaction)
- **Energy Management, Control & Sector Coupling**
  (Energy management systems, digital control, multi-vector coupling)

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