

LIBERATING INNOVATORS

Liberating businesses, individuals and future generations to unleash our economy



Callaghan Innovation

ADVANCED MATERIALS

Refers to all new materials, and modifications to existing materials, to obtain superior performance in one or more properties



TRADITIONAL MATERIALS





PLASTIC











CHANGE

NEW FORM FACTORS FOR EXISTING MATERIALS e.g. Honeycomb Structures

NEW WAYS OF COMBINING EXISTING MATERIALS e.g. Composites

NEW SOURCES FOR EXISTING MATERIALS e.g. Bioplastics

NEW WAYS OF PUTTING ATOMS TOGETHER

NEW PROPERTIES



Lighter weight



More / less ductile



Self-healing



More corrosion resistance



More / less conductive



More flexible



More / less gas permeable



Release of active ingredients



More / less surface friction



More / less chemical resistance



More sustainable



More / less transmission



Targeted thermal properties





Anti-microbial / bacterial



Stronger



More / less biodegradable



Antifouling



User-defined

APPLICATIONS

Food Products

Constructon & Architecture

Packaging

Agriculture

Paint & Coatings

Personal Care

Infrastructure

Consumer Goods

Medical Equipment

Marine

Aerospace

Lighting

Sensors

Automotive & Rail

Heavy Machinery

Electronics

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ADVANCED MATERIALS

IN THE BUILT ENVIRONMENT



- A PHOTOVOLTAIC ROOF TILES Integrated, unobtrusive solar energy harvesting
- B AEROGEL INSULATION
 Lightweight, highly effective thermal insulation
- FIRE RETARDENT TEXTILES Increased in-home safety
- D CERAMIC TAP WASHER
 Decreased surface friction for more
 efficient mechanism
- BIO-BASED BRICKS
 Lightweight and environmentally sustainable
- AIR-PURIFYING FLOORING
 Anti-microbial and removes volatile organic compounds (VOCs)
- G PIEZOELECTRIC STAIRS
 Power generation from footsteps

- H SUPERHYDROPHOBIC COATINGS
 Water-repelling for self-cleaning surfaces
- NANOFIBRE AIR FILTRATION
 More efficient and can integrate
 anti-microbial properties
- J FIBRE OPTIC SENSORS
 In-wall structural and health monitoring
- K SELF-HEALING CONCRETE
 Active ingredient repairs cracks as they form
- L SMART WINDOWS
 Controllable transmission of light
- M CONDUCTIVE PAINT On-wall light switches
- N ENGINEERED TIMBER
 Increased strength/weight ratio
 and quicker construction



