

The Global Market for Smart and Sustainable Buildings 2023-2033

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Abstracts

Due to evolving standards for building regulations and demand for occupant comfort, the performance of building envelopes continues to improve. Buildings account for ~30-40% of the world's total primary energy, and the benefits of energy efficient buildings are numerous, from better thermal comfort to longer buildings lifecycle. In order to adhere to regulations, many new buildings are required to meet energy efficiency targets. These targets are increasingly met through technology, and in most cases rely on advanced materials, either by developing new materials or modifying existing ones.

The use of advanced materials, nanomaterials, and smart materials, is now driving improved building envelope performance by allowing reconciliation of the architectural features of buildings with the new challenges of energy and environmental efficiency. Technologies and materials include:

Smart glass and windows

Electrochromic (EC) smart glass

Thermochromic smart glass

Suspended particle device (SPD) smart glass

Polymer dispersed liquid crystal (PDLC) smart glass

Photochromic smart glass

Micro-blinds

Electrokinetic glass

Graphene smart glass

Heat insulation solar glass (HISG)

Thermal and sound insulation

Vacuum Insulation Panels (VIP)

Aerogels

Transparent Insulation Materials (TIM)

Metamaterials

Graphene

Nanofiber?based insulation material

Shape memory sound absorption

Advanced construction materials

Advanced concrete additives

Graphene

Multi-walled carbon nanotubes (MWCNTs)

Single-walled carbon nanotubes (SWCNTs)

Cellulose nanofibers

Nanosilica

Nano-titania (TiO₂)

Zycosoil

Phase change materials

Self-healing materials

Self-sensing concrete

3D printing construction materials

Environment-adaptive skin facades

Memory steel

Biomaterials

Double-skin facades

Carbon negative concrete

Vibration dampening

Passive vibration mitigation materials

Smart vibration mitigation materials

Metamaterials

Shape memory materials

Carbon nanotubes

Magnetorheological fluid (MRF)

Magnetostrictive materials

Smart coatings and films

Cool roofs

Antireflective glazing

Metamaterials

Photocatalytic self-cleaning coatings

Hydrophobic coatings

Superhydrophobic surfaces

Anti-fouling and easy-to-clean coatings

Advanced antimicrobial coatings

Thermally insulating paint

Smart air filtration and HVAC

Nanofibers

Graphene

Metal-Organic Frameworks (MOF)

Nanosilver filters

Carbon nanotubes

Phase change materials

Nano-TiO₂ photocatalyst filter coatings

Self-healing coatings

Heating and energy efficiency

Metal-Organic Frameworks (MOF)

Phase change materials

Energy harvesting

Piezoelectric materials

Thermoelectric materials

Building Integrated Photovoltaics (BIPV)

Bioadaptive glazing

Smart sensors

Temperature sensors

Motion sensors

Humidity sensors

Sensors for air quality

CO2 sensors for energy efficient buildings

Smart lighting

LEDs

Organic LEDs (OLEDs)

Quantum dots

Flexible lighting

Report contents include:

Market drivers for advanced materials in smart and sustainable buildings.

Revenues for smart and advanced materials building applications and markets, 2021-2033 (millions USD).

In-depth technology analysis.

In depth market analysis.

Profiles of over 250 companies in the smart and sustainable buildings market. Companies profiled include Acoustic Metamaterials Group Limited, Aerogel Technologies LLC, Ambient Photonics, Aspen Aerogels, Blueshift Materials, Inc., CarbiCrete, CarbonCure Technologies, Carbon Upcycling Technologies, ChromoGenics AB, ClearVue Technologies, Eterbright Solar Corporation, Fortera, GoodWe, HeatVentors, JinkoSolar, Next Energy Technologies, Inc, Onyx Solar, Phononic Vibes, RavenWindow, Research Frontiers, Inc., Inc., Solidia Technologies etc.

Contents

1 EXECUTIVE SUMMARY

- 1.1 What are smart buildings?
- 1.2 Integration into smart cities
- 1.3 Market drivers
- 1.4 Adaptive facades
- 1.5 Smart/switchable/dynamic glass or smart windows
- 1.6 Advanced thermal and sound insulation
- 1.7 Smart lighting
- 1.8 Smart coatings
- 1.9 Energy harvesting
- 1.10 Market revenues and forecasts, by technology area to 2033

2 AIMS AND OBJECTIVES OF THIS STUDY

3 RESEARCH METHODOLOGY

4 SMART GLASS AND WINDOWS

- 4.1 What is smart glass?
- 4.2 Market drivers for smart glass
- 4.3 Smart windows
 - 4.3.1 Controlling light transmission
- 4.4 Types of smart glass
 - 4.4.1 Passive smart glass
 - 4.4.2 Active smart glass
- 4.5 Comparison of smart glass technologies
- 4.6 Nanomaterials in smart glass
- 4.7 Competitive landscape
- 4.8 Manufacturers
- 4.9 Routes to market
 - 4.9.1 Residential and commercial glazing
- 4.10 Market and technical challenges
- 4.11 Future of smart glass
 - 4.11.1 Need for innovation
 - 4.11.2 Reducing costs
 - 4.11.3 Integration with building systems/Internet of things (IoT)

- 4.11.4 Photovoltaic smart glass
- 4.11.5 Faster switching times
- 4.12 Advanced materials for smart glass and windows
 - 4.12.1 Electrochromic (EC) smart glass
 - 4.12.1.1 Technology description
 - 4.12.1.2 Materials
 - 4.12.1.2.1 Inorganic metal oxides
 - 4.12.1.2.2 Organic EC materials
 - 4.12.1.2.3 Nanomaterials
 - 4.12.1.3 Benefits
 - 4.12.1.4 Shortcomings
 - 4.12.1.5 Application in residential and commercial windows
 - 4.12.1.6 Companies
 - 4.12.2 Thermochromic smart glass
 - 4.12.2.1 Technology description
 - 4.12.2.2 Benefits
 - 4.12.2.3 Shortcomings
 - 4.12.2.4 Application in residential and commercial windows
 - 4.12.2.5 Companies
 - 4.12.3 Suspended particle device (SPD) smart glass
 - 4.12.3.1 Technology description
 - 4.12.3.2 Benefits
 - 4.12.3.3 Shortcomings
 - 4.12.3.4 Application in residential and commercial windows
 - 4.12.3.5 Companies
 - 4.12.4 Polymer dispersed liquid crystal (PDLC) smart glass
 - 4.12.4.1 Technology description
 - 4.12.4.2 Types
 - 4.12.4.2.1 Laminated Switchable PDLC Glass
 - 4.12.4.2.2 Self-adhesive Switchable PDLC Film
 - 4.12.4.3 Benefits
 - 4.12.4.4 Shortcomings
 - 4.12.4.5 Application in residential and commercial windows
 - 4.12.4.5.1 Interior glass
 - 4.12.4.6 Companies
 - 4.12.5 Photochromic smart glass
 - 4.12.5.1 Technology analysis
 - 4.12.5.2 Application in residential and commercial windows
 - 4.12.6 Micro-blinds

- 4.12.6.1 Technology analysis
- 4.12.6.2 Benefits
- 4.12.7 Electrokinetic glass
 - 4.12.7.1 Technology analysis
 - 4.12.7.2 Companies
- 4.12.8 Other advanced glass technologies
 - 4.12.8.1 Graphene smart glass
 - 4.12.8.1.1 Companies
 - 4.12.8.2 Heat insulation solar glass (HISG)
 - 4.12.8.3 Quantum dot solar glass

5 ADVANCED CONSTRUCTION MATERIALS

- 5.1 Market drivers
- 5.2 Concrete additives
 - 5.2.1 Graphene
 - 5.2.2 Multi-walled carbon nanotubes (MWCNTs)
 - 5.2.3 Single-walled carbon nanotubes (SWCNTs)
 - 5.2.4 Cellulose nanofibers
 - 5.2.5 Nanosilica
 - 5.2.6 Nano-titania (TiO₂)
 - 5.2.7 Zycosoil
 - 5.2.8 Phase change materials
 - 5.2.9 Self-healing materials
 - 5.2.9.1 Extrinsic self-healing
 - 5.2.9.2 Capsule-based
 - 5.2.9.3 Vascular self-healing
 - 5.2.9.4 Intrinsic self-healing
 - 5.2.9.5 Healing volume
 - 5.2.9.6 Self-healing concrete
 - 5.2.9.6.1 Bioconcrete
 - 5.2.9.6.2 Fibre concrete
- 5.3 Self-sensing concrete
 - 5.3.1 Filler materials
 - 5.3.2 Applications
- 5.4 Memory steel
- 5.5 Biomaterials
 - 5.5.1 Mycelium
 - 5.5.2 Microalgae biocement

- 5.6 Carbon-negative concrete
- 5.7 Companies

6 VIBRATION DAMPING

- 6.1 Advanced materials for vibration damping
 - 6.1.1 Metamaterials
 - 6.1.2 Shape memory materials
 - 6.1.2.1 Shape memory effect
 - 6.1.2.2 Superelasticity
 - 6.1.2.3 Nickel-Titanium (Ni-Ti) alloys
 - 6.1.2.3.1 Properties
 - 6.1.2.4 Copper-based SMAs
 - 6.1.2.5 Iron-based SMAs
 - 6.1.2.6 Hardened high temperature shape memory alloys (HTSMAs)
 - 6.1.2.7 Titanium-Tantalum (Ti-Ta)-based alloys
 - 6.1.2.8 Shape-memory polymers
 - 6.1.3 Carbon nanotubes
 - 6.1.4 Magnetorheological fluid (MRF)
 - 6.1.5 Magnetostrictive materials
 - 6.1.6 Piezoelectric ceramics
- 6.2 Companies

7 SMART COATINGS

- 7.1 Market drivers
- 7.2 Advanced materials for smart coatings and films
 - 7.2.1 Metamaterial cooling films
 - 7.2.2 Photocatalytic self-cleaning coatings
 - 7.2.2.1 Glass coatings
 - 7.2.2.2 Exterior coatings
 - 7.2.2.3 Interior coatings
 - 7.2.2.3.1 Medical facilities
 - 7.2.2.3.2 Antimicrobial coating indoor light activation
 - 7.2.3 Hydrophobic coatings
 - 7.2.4 Superhydrophobic surfaces
 - 7.2.4.1 Properties
 - 7.2.5 Anti-fouling and easy-to-clean coatings
 - 7.2.6 Advanced antimicrobial coatings

- 7.2.6.1 Metallic-based coatings
- 7.2.6.2 Polymer-based coatings
- 7.2.6.3 Mode of action
- 7.2.7 Thermally insulating paint
- 7.2.8 High reflectance coatings
- 7.2.9 Self-healing coatings
- 7.3 Companies

8 SMART AIR FILTRATION AND HVAC

- 8.1 Market drivers
- 8.2 Advanced materials for smart filtration and HVAC
 - 8.2.1 Nanomaterials
 - 8.2.2 Carbon nanotubes
 - 8.2.3 Graphene
 - 8.2.4 Nanofibers
 - 8.2.4.1 Polymer nanofibers
 - 8.2.4.2 Cellulose nanofibers
 - 8.2.5 Nanosilver
 - 8.2.6 Metal-Organic Frameworks (MOF)
 - 8.2.7 Phase change materials
 - 8.2.8 Nano-TiO₂ photocatalyst coatings
- 8.3 Companies

9 THERMAL AND SOUND INSULATION

- 9.1 Advanced materials for heating and energy efficiency
- 9.2 Market drivers
- 9.3 Advanced materials for thermal and sound insulation
 - 9.3.1 Vacuum Insulation Panels (VIP)
 - 9.3.2 Aerogels
 - 9.3.2.1 Commercially available aerogels
 - 9.3.2.2 Silica aerogels
 - 9.3.2.2.1 Properties
 - 9.3.2.2.1.1 Thermal conductivity
 - 9.3.2.2.1.2 Mechanical
 - 9.3.2.2.2 Monoliths
 - 9.3.2.2.3 Powder
 - 9.3.2.2.4 Granules

- 9.3.2.2.5 Blankets
- 9.3.2.2.6 Aerogel boards
- 9.3.2.2.7 Aerogel renders
- 9.3.2.3 Aerogel-like polymer foams
- 9.3.2.4 Biobased aerogels (bio-aerogels)
 - 9.3.2.4.1 Cellulose aerogels
 - 9.3.2.4.1.1 Cellulose nanofiber (CNF) aerogels
 - 9.3.2.4.1.2 Cellulose nanocrystal aerogels
 - 9.3.2.4.2 Lignin aerogels
 - 9.3.2.4.3 Alginate aerogels
 - 9.3.2.4.4 Starch aerogels
- 9.3.2.5 Thermal and sound insulation
- 9.3.2.6 3D printed aerogels
- 9.3.3 Metal-Organic Frameworks (MOF)
 - 9.3.3.1 Heat exchangers for heat pumps
- 9.3.4 Phase change materials
 - 9.3.4.1 Organic/biobased phase change materials
 - 9.3.4.1.1 Paraffin wax
 - 9.3.4.1.2 Non-Paraffins/Bio-based
 - 9.3.4.2 Inorganic phase change materials
 - 9.3.4.2.1 Salt hydrates
 - 9.3.4.2.2 Metal and metal alloy PCMs (High-temperature)
 - 9.3.4.3 Eutectic mixtures
 - 9.3.4.4 Encapsulation of PCMs
 - 9.3.4.4.1 Macroencapsulation
 - 9.3.4.4.2 Micro/nanoencapsulation
 - 9.3.4.5 Nanomaterial phase change materials
 - 9.3.4.6 PCMS in buildings and construction
 - 9.3.4.6.1 Water heaters
 - 9.3.4.6.2 Thermal batteries for water heaters and EVs
- 9.3.5 Metamaterials
 - 9.3.5.1 Metasurfaces
 - 9.3.5.2 Types of metamaterials
 - 9.3.5.3 Sound insulation
- 9.3.6 Graphene
- 9.3.7 Nanofiber?based insulation material
 - 9.3.7.1 Polymer nanofibers
 - 9.3.7.2 Alumina nanofibers
- 9.4 Companies

10 BUILDING ENERGY HARVESTING AND GENERATION

10.1 Market drivers

10.2 Advanced materials for building energy harvesting

10.2.1 Piezoelectric materials

10.2.2 Thermoelectric materials

10.2.3 Building Integrated Photovoltaics (BIPV)

10.2.3.1 Photovoltaic glazing

10.2.3.2 Dye-sensitized solar cells (DSSCs)

10.2.3.3 Organic solar cells (OSCs)

10.2.3.4 Perovskite solar cells (PSCs)

10.2.3.5 Quantum dot solar cells (QDSCs)

10.2.3.6 Copper zinc tin sulphide solar cells (CZTS)

10.2.4 Microalgae bioreactive fa?ades

10.3 Companies

11 SMART SENSORS

11.1 Market drivers

11.2 Types of smart building sensors

11.3 Applications

11.3.1 Temperature and humidity sensors

11.3.2 Sensors for air quality

11.3.3 Magnetostrictive sensors

11.3.4 Magneto- and electrorheological fluids

11.3.5 CO2 sensors for energy efficient buildings

11.4 Companies

12 SMART LIGHTING

12.1 Market drivers

12.2 Advanced materials for smart lighting

12.2.1 LEDs

12.2.2 Organic LEDs (OLEDs)

12.2.3 Quantum dots

12.2.4 Graphene

12.2.5 Sensor-based lighting

12.3 Companies

13 REFERENCES

Tables

TABLES

Table 1. Market drivers for advanced materials in smart and sustainable buildings.

Table 2. Summary of adaptive facade technologies and processes.

Table 3. Markets for smart glass and windows.

Table 4: Properties of nanocoatings.

Table 5. Comparison of smart glass and windows types.

Table 6. Market drivers for smart glass.

Table 7. Technologies controlling daylight transmission.

Table 8. Types of passive smart glass.

Table 9. Types of active smart glass.

Table 10. Advantages and disadvantages of respective smart glass technologies.

Table 11. Market structure for smart glass and windows.

Table 12. Manufacturers of smart film and glass, by type.

Table 13. Routes to market for smart glass companies.

Table 14. Technologies for smart windows in buildings.

Table 15. Market and technical challenges for smart glass and windows, by main technology type.

Table 16. Types of electrochromic materials and applications.

Table 17. Market drivers for advanced construction materials.

Table 18. Graphene for concrete and cement.

Table 19. Typical properties of nanosilica.

Table 20. Types of self-healing coatings and materials.

Table 21. Comparative properties of self-healing materials.

Table 22. Types of self-healing concrete.

Table 23. Types of fillers in self-sensing concrete.

Table 24. Applications of self-sensing concrete.

Table 25. Overview of mycelium fibers-description, properties, drawbacks and applications.

Table 26. Physical properties of NiTi.

Table 27. Applications of shape memory materials in construction and stage of development.

Table 28. Properties of copper-based shape memory alloys

Table 29. Comparison between the SMAs and SMPs.

Table 30. Market drivers for smart coatings in buildings.

Table 31. Advanced coating applied in the building and construction industry.

Table 32. Contact angles of hydrophilic, super hydrophilic, hydrophobic and

superhydrophobic surfaces.

Table 33. Anti-fouling and easy-to-clean coatings-Nanomaterials used, principles, properties and applications.

Table 34. Polymer-based coatings for antimicrobial coatings and surfaces.

Table 35. Market drivers for smart air filtration and HVAC.

Table 36. Comparison of CNT membranes with other membrane technologies

Table 37. Market and applications for graphene in filtration.

Table 38. Market assessment for PCMs in building and construction-market age, applications, key benefits and motivation for use, market drivers and trends, market challenges.

Table 39. Types of thermal insulation materials.

Table 40. Market drivers for advanced materials in thermal and sound insulation.

Table 41. Technologies controlling heat loss from windows, walls and roofs in smart and sustainable buildings.

Table 42. Comparison of VIP with other insulation.

Table 43. Market overview of aerogels in building and construction-market drivers, types of aerogels utilized, motivation for use of aerogels, applications, TRL.

Table 44. General properties and value of aerogels.

Table 45. Commercially available aerogel-enhanced blankets.

Table 46. PCM Types and properties.

Table 47. Advantages and disadvantages of organic PCM Fatty Acids.

Table 48. Advantages and disadvantages of salt hydrates

Table 49. Advantages and disadvantages of low melting point metals.

Table 50. Market assessment for PCMs in building and construction-market age, applications, key benefits and motivation for use, market drivers and trends, market challenges.

Table 51. Market assessment for PCMs in thermal storage systems-market age, applications, key benefits and motivation for use, market drivers and trends, market challenges.

Table 52. CrodaTherm Range.

Table 53. Market drivers for advanced materials and technologies in energy harvesting for buildings.

Table 54. Technologies generating electricity in smart buildings.

Table 55. Market drivers for smart sensors for buildings.

Table 56. Types of smart building sensors.

Table 57. Commonly used sensors in smart buildings.

Table 58. Types of flexible humidity sensors.

Table 59. MOF sensor applications.

Table 60: Market drivers for smart lighting in smart and sustainable buildings.

Table 61. QD-LEDs and External quantum efficiencies (EQE).

Table 62. Market and applications for graphene in lighting.

Figures

FIGURES

Figure 1. Productivity and comfort gains achieved through window and ventilation technologies.

Figure 2. SLENTEX® thermal insulation.

Figure 3. Energy harvesting technologies.

Figure 4. Energy harvesting solutions in smart buildings.

Figure 5. Global market revenues for smart buildings, by technology areas, 2018-2033 (Millions USD).

Figure 6. Nanocrystal smart glass that can switch between fully transparent, heat-blocking, and light-and-heat-blocking modes.

Figure 7. Typical setup of an electrochromic device (ECD).

Figure 8. Electrochromic smart glass schematic.

Figure 9. Electrochromic smart glass.

Figure 10. Examples of electrochromic smart windows each in fully coloured (left) and bleached state (right).

Figure 11. Argil smart glass for buildings.

Figure 12. CoverLight by Chromogenics.

Figure 13. Thermochromic smart windows schematic.

Figure 14. Vertical insulated glass unit for a Suntuitive® thermochromic window.

Figure 15. SPD smart windows schematic.

Figure 16. SPD film lamination.

Figure 17. SPD smart film schematic. Control the transmittance of light and glare by adjusting AC voltage to the SPD Film.

Figure 18. SPD film glass installation at Indiana University.

Figure 19. Schematic of Cromalite SPD film.

Figure 20. PDLC schematic.

Figure 21. Schematic of PDLC film and self-adhesive PDLC film.

Figure 22. Smart glass made with polymer dispersed liquid crystal (PDLC) technology.

Figure 23. e-Tint® cell in the (a) OFF and in the (b) ON states.

Figure 24. Bedroom Smart VU film.

Figure 25. Schematic of Magic Glass.

Figure 26. Application of Magic Glass in office.

Figure 27. Installation schematic of Magic Glass.

Figure 28. Micro-blinds schematic.

Figure 29. Cross-section of Electro Kinetic Film.

Figure 30. Schematic of HISG.

- Figure 31. UbiQD PV windows.
- Figure 32. Comparison of nanofillers with supplementary cementitious materials and aggregates in concrete.
- Figure 33. MWCNTS in concrete and cement.
- Figure 34. SWCNTS in concrete and cement.
- Figure 35. Market overview for cellulose nanofibers in concrete and cement additives.
- Figure 36. SEM micrographs of plain (A) and nano-silica modified cement paste (B).
- Figure 37. Schematic of photocatalytic air purifying pavement.
- Figure 38. Application of Zycosil in concrete.
- Figure 39. Phase change materials for thermal energy storage in concrete.
- Figure 40. Schematic of self-healing polymers. Capsule based (a), vascular (b), and intrinsic (c) schemes for self-healing materials. Red and blue colours indicate chemical species which react (purple) to heal damage.
- Figure 41. Stages of self-healing mechanism.
- Figure 42. Schematic of the self-healing concept using microcapsules with a healing agent inside.
- Figure 43. Self-healing mechanism in vascular self-healing systems.
- Figure 44. Comparison of self-healing systems.
- Figure 45. Self-healing bacteria crack filler for concrete.
- Figure 46. Self-healing concrete test study with cracked concrete (left) and self-healed concrete after 28 days (right).
- Figure 47. Self-healing bacteria crack filler for concrete.
- Figure 48. Self-healing concrete.
- Figure 49. Self-sensing concrete schematic.
- Figure 50. Memory-steel reinforcement bars.
- Figure 51. Typical structure of mycelium-based foam.
- Figure 52. Commercial mycelium composite construction materials.
- Figure 53. Microalgae based biocement masonry bloc.
- Figure 54. Graphene asphalt additives.
- Figure 55. OG (Original Graphene) Concrete Admix Plus.
- Figure 56. Talcoat graphene mixed with paint.
- Figure 57. Metamaterials example structures.
- Figure 58. Metamaterial schematic versus conventional materials.
- Figure 59. Robotic metamaterial device for seismic-induced vibration mitigation.
- Figure 60. Hysteresis cycle for Superelastic and shape memory material.
- Figure 61. Shape memory effect.
- Figure 62. Superelasticity Elastic Property.
- Figure 63. Stress x Strain diagram.
- Figure 64. Shape memory pipe joint.

Figure 65. The molecular mechanism of the shape memory effect under different stimuli.

Figure 66. Cabkoma strand rod.

Figure 67. Viscoelastic coupling damper.

Figure 68. Schematic of dry-cooling technology.

Figure 69. Mechanism of photocatalysis on a surface treated with TiO₂ nanoparticles.

Figure 70. Schematic showing the self-cleaning phenomena on superhydrophilic surface.

Figure 71. Titanium dioxide-coated glass (left) and ordinary glass (right).

Figure 72. Schematic of photocatalytic air purifying pavement.

Figure 73. Self-Cleaning mechanism utilizing photooxidation.

Figure 74. (a) Water drops on a lotus leaf.

Figure 75. Self-cleaning superhydrophobic coating schematic.

Figure 76. Contact angle on superhydrophobic coated surface.

Figure 77. Antibacterial mechanisms of metal and metallic oxide nanoparticles.

Figure 78. GermStopSQ mechanism of action.

Figure 79. NO_x reduction with TioCem®.

Figure 80. Quartzene®.

Figure 81. V-CAT® photocatalyst mechanism.

Figure 82. Applications of Titanystar.

Figure 83. Capture mechanism for MOFs toward air pollutants.

Figure 84. Schematic of photocatalytic indoor air purification filter.

Figure 85. Photocatalytic oxidation (PCO) air filter.

Figure 86. Schematic indoor air filtration.

Figure 87: CNF gel.

Figure 88: Block nanocellulose material.

Figure 89. Mosaic Materials MOFs.

Figure 90. MOF-based cartridge (purple) added to an existing air conditioner.

Figure 91. Global energy consumption growth of buildings.

Figure 92. Energy consumption of residential building sector.

Figure 93. Vacuum Insulation Panel (VIP).

Figure 94. Main characteristics of aerogel type materials.

Figure 95. Classification of aerogels.

Figure 96. Flower resting on a piece of silica aerogel suspended in mid air by the flame of a bunsen burner.

Figure 97. Monolithic aerogel.

Figure 98. Aerogel granules.

Figure 99. Internal aerogel granule applications.

Figure 100. Fabrication routes for starch-based aerogels.

- Figure 101. Aerogel construction applications.
- Figure 102. Commonly employed printing technologies for aerogels.
- Figure 103. Schematic for direct ink writing of silica aerogels.
- Figure 104. 3D printed aerogel.
- Figure 105. MOF-coated heat exchanger.
- Figure 106. Classification of PCMs.
- Figure 107. Phase-change materials in their original states.
- Figure 108. Schematic of PCM use in buildings.
- Figure 109. Comparison of the maximum energy storage capacity of 10 mm thickness of different building materials operating between 18 °C and 26 °C for 24 h.
- Figure 110. Schematic of PCM in storage tank linked to solar collector.
- Figure 111. UniQ line of thermal batteries.
- Figure 112. Metamaterials example structures.
- Figure 113. Metamaterial schematic versus conventional materials.
- Figure 114. Prototype metamaterial device used in acoustic sound insulation.
- Figure 115. Metamaterials installed in HVAC sound insulation the Hotel Madera Hong Kong.
- Figure 116. Graphene aerogel.
- Figure 117. TE module schematic.
- Figure 118. Utilization of TE materials in exterior walls for energy generation, heating and cooling.
- Figure 119. The Sun Rock building, Taiwan.
- Figure 120. Photovoltaic solar cells.
- Figure 121. Classification of BIPV products.
- Figure 122. BIQ House in Hamburg.
- Figure 123. Photo.Synth.Etica curtain.
- Figure 124. Hikari building incorporating SunEwat Square solar glazing.
- Figure 125. Elegante solar glass panel.
- Figure 126. Certaineed Apollo-2 solar shingles roof.
- Figure 127. Triple insulated glass unit for the Stadtwerke Konstanz energy cube in Germany.
- Figure 128. Moscow building incorporating Hevel's BIPV product.
- Figure 129. Mitrex solar facade layers.
- Figure 130. Solar Brick by Mitrex
- Figure 131. QDSSC Module.
- Figure 132. DragonScales technology.
- Figure 133. Photovoltaic integration in facade at the Gioia 22 skyscraper, in Milan.
- Figure 134. S6 flexible solar module.
- Figure 135. Ubiquitous Energy windows installed at the Boulder Commons in Colorado.

Figure 136. Use of sensors in smart buildings.

Figure 137. Sensor surface.

Figure 138. Printed moisture sensors.

Figure 139. Fourth generation QD-LEDs.

Figure 140. Applications of graphene in lighting.

Figure 141. Graphene LED bulbs.

Figure 142. iOLED film light source.

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