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# **GROWTH OPPORTUNITIES IN TECHVISION 2019 STRATEGIC INSIGHTS**

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# GLOBAL GROWTH OPPORTUNITIES

Frost & Sullivan's premier offering, TechVision, identifies and evaluates the most essential, innovative, emerging and disruptive technologies on the market today while providing a variety of technology based alerts, newsletters, syndicated research and growth consulting services. A unique feature of the TechVision program is an annual selection of 50 technologies that can generate convergence scenarios, possibly disrupt the innovation landscape and drive transformational growth.

View a summary of our TechVision program by [clicking here](#).

The following table of contents showcases our recently published and prospective studies.

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# ENERGY & UTILITY TECHNOLOGY

We provide global insights and intelligence on a wide variety of disruptive and emerging technologies ranging from energy storage, advanced batteries, solar and wind energy, to unconventional oil, bioenergy, geothermal energy and energy transmission.

## RECENT RESEARCH

D87E	Technology Convergence Enabling Agriculture 2.0
D882	Breakthrough Innovations in Radioactive Waste Management
D883	Technologies in Power Transmission and Distribution
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D811	Alternate to Plastics: Emerging Technology Assessment
D87D	Distributed Energy: Impact of Blockchain on Energy Trading
D899	Turning Big Data to Smart Data: Emerging Opportunities
D88F	Emerging Opportunities for Sulfur
D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D868	Next-gen Solar Cells: Innovations and Impact Analysis
D86D	Technologies Enabling Smart Water Grid
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World
D80E	Emerging Technologies in E-Waste and Battery Recycling
D858	Breakthrough Innovations in Power Semiconductors
D873	Technologies Enabling Low Carbon Economy
D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D86C	Breakthrough Innovations in Energy Storage
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D82A	Battery and Power Train Technologies for Electric Vehicles
D85A	Advancements in Marine Propulsion Technologies
D7F9	Innovations in Solid State Battery

# ENERGY & UTILITY TECHNOLOGY

## RECENT RESEARCH

D78F	FEW (Food, Energy and Water) Nexus
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D82B	Material Technologies Shaping the Future of Electric Vehicles
D83C	2018 Top Technologies in Energy and Utilities
D81E	ICT Technologies Transforming the Future of Automotive Sector
D7F4	Technologies Impacting the Future of Tight Oil Extraction
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances
D805	Technologies Enabling Prosumerism in Energy Sector
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7E2	Alternate Feedstocks And Process Technologies For Conversion Of Gas To Chemicals
D7F5	Innovations in Computer Vision Applications Powered by AI
D7F1	Unraveling The Chinese Innovation Puzzle
D74D	Innovations in Smart Glazing
D7DB	Innovations Impacting Industrial Sensing
D7F3	Technologies Impacting the Future of Smart Cities
D78C	Emerging Opportunities for Self-Healing Materials
D7E0	Technologies Enabling Zero Energy Buildings
D7DA	Advanced Analytics: Disruptive Opportunities
D7E4	R&D Focus Areas for Battery Anode and Cathode
D78D	Advances in Anti Fouling Coatings
D7D5	Rapid Charging Technology Empowering Small-Scale Electronics

# ENERGY & UTILITY TECHNOLOGY

## UPCOMING RESEARCH

- Technical Fabrics in Filtration- Opportunity Assessment
- Enabling Technologies for Valorisation of Waste Streams from Oil & Gas Operations
- Global Benchmarking of Sustainability Trends in the Industrial Sector
- Emerging Innovations Transforming Upstream Oil & Gas Industries
- Emerging Technologies Transforming Offshore Wind Energy
- Augmented Analytics: Future of Business Intelligence
- 5G: the Emerging Digital Frontier
- Nanomanufacturing: Global Impact Assessment
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Emerging Technologies Advancing Carbon Capture, Utilization and Storage
- Technologies Enabling Circular Economy
- Technological Advancements and Emerging Applications of Fuel Cells
- Technology Advancements in Metals Enhancing Energy Generation
- Internet of Transformation: Advancements in IoT
- Cognitive Security: The New Global Imperative
- Geospatial Intelligence Driving the Future of Smart Cities
- Opportunities for Sensors in Digital Farming

# ENVIRONMENT & SUSTAINABLE TECHNOLOGY

Frost & Sullivan tracks all development and market trends within technology industries that contribute to the protection and sustainability of the environment.

## RECENT RESEARCH

D87E	Technology Convergence Enabling Agriculture 2.0
D882	Breakthrough Innovations in Radioactive Waste Management
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D811	Alternate to Plastics: Emerging Technology Assessment
D87D	Distributed Energy: Impact of Blockchain on Energy Trading
D88D	Microbiome Technologies Fueling Human Health and Wellness
D898	Sustainability Trends Benchmarking of Global Automotive Companies
D88F	Emerging Opportunities for Sulfur
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D868	Next-gen Solar Cells: Innovations and Impact Analysis
D86D	Technologies Enabling Smart Water Grid
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World
D80E	Emerging Technologies in E-Waste and Battery Recycling
D873	Technologies Enabling Low Carbon Economy
D86C	Breakthrough Innovations in Energy Storage
D82A	Battery and Power Train Technologies for Electric Vehicles
D85A	Advancements in Marine Propulsion Technologies
D847	Functional Coatings for Flexible Packaging: Technology Impact Assessment
D7F9	Innovations in Solid State Battery
D78F	FEW (Food, Energy and Water) Nexus
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D83D	2018 Top Technologies in Environment and Sustainability
D7F7	Efficient Hazardous Waste Recycling Technologies for Developing Nations

# ENVIRONMENT & SUSTAINABLE TECHNOLOGY

## RECENT RESEARCH

D7FD	Innovations in Structural Electronics
D7F6	Industrial Waste Water Recovery and Reuse Technologies
D7D2	Emission Control Technologies In Automotive & Transportation
D7EC	Technology Breakthroughs Enabling Low-VOC Coatings
D7F1	Unraveling The Chinese Innovation Puzzle
D74D	Innovations in Smart Glazing
D7E3	Manufacturing Technologies Empowering Automotive Lightweighting
D7F3	Technologies Impacting the Future of Smart Cities
D7E0	Technologies Enabling Zero Energy Buildings
D7EE	Innovations in Wastewater Nutrient Recovery
D78D	Advances in Anti Fouling Coatings
D7CF	Innovations in Urban Farming
D7D7	Innovations in Smart Sensors
D7AE	Air Pollution Control And Mitigation Technologies
D6EB	Future of Thermoelectric Energy Harvesting
D79A	Climate Change Technologies for the Oil & Gas Sector
D7AC	Decentralized Wastewater and Solid Waste Treatment Technologies
D7BE	Water Conservation Technologies In Agriculture
D7C3	Top Technologies in Environment and Sustainability, 2017
D72A	Emerging Technologies Stimulating the Future of Agriculture
D6D0	IoT: R&D Cluster Benchmarking
D77C	Technologies Impacting the Future of the Aerospace and Defense Sector
D70C	Technologies Impacting theFuture of the Energy Sector
D7FD	Innovations in Structural Electronics
D7F6	Industrial Waste Water Recovery and Reuse Technologies
D7D2	Emission Control Technologies In Automotive & Transportation

# ENVIRONMENT & SUSTAINABLE TECHNOLOGY

## UPCOMING RESEARCH

- Technical Fabrics in Filtration- Opportunity Assessment
- Emerging Opportunities for Nanoemulsions
- Innovation Landscape in Noise Reduction
- Global Benchmarking of Sustainability Trends in the Industrial Sector
- Emerging Innovations Transforming Upstream Oil & Gas Industries
- Emerging Technologies Transforming Offshore Wind Energy
- Augmented Analytics: Future of Business Intelligence
- 5G: the Emerging Digital Frontier
- Disruptive Innovations in Enzymes
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Emerging Technologies Advancing Carbon Capture, Utilization and Storage
- Technologies Enabling Circular Economy
- Technological Advancements and Emerging Applications of Fuel Cells
- Technology Advancements in Metals Enhancing Energy Generation
- Cognitive Security: The New Global Imperative
- Geospatial Intelligence Driving the Future of Smart Cities
- Intelligent Automation Technologies Transforming Industrial Manufacturing
- Disruptive Innovations in Biosurfactants



# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

Frost & Sullivan's expert analyst track both research and innovation trends within a multitude of industries. Our studies will include data as it pertains to the impact and/or application of chemicals, bio-chemicals, specialty chemicals, plastics, polymers, metals, coatings, thinfilms, surface treatments, composites, alloys, oil & gas, fuel additives and fibers to name a few

## RECENT RESEARCH

D856	Technology Convergence Transforming E-textiles
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88C	Breakthrough Sensor Innovations in Food and Beverage Sector
D811	Alternate to Plastics: Emerging Technology Assessment
D899	Turning Big Data to Smart Data: Emerging Opportunities
D864	Disruptive Innovations in Natural Colors
D887	Disruptive Innovations Redesigning Orthopedic Devices and Procedures
D88E	Metal 3D Printing Revolutionizing Modern Manufacturing
D88F	Emerging Opportunities for Sulfur
D894	Big Area Additive Manufacturing: Technology Adoption Assessment
D87C	Micro- and Nano- encapsulation: Technology Impact Analysis
D867	Emerging Opportunities for Conductive Polymers
D87B	Emerging Opportunities for Quantum Dots
D875	Hybrid Manufacturing: Technology Roadmapping and Opportunities
D87A	Measurement-while Drilling – Patenting and Technology Development Trends
D85D	Technology Breakthroughs in Zero-Friction Coatings
D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D84F	Emerging Technologies in Printing
D865	Self-healing Coatings: Opportunity Analysis
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World

# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

## RECENT RESEARCH

D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D86C	Breakthrough Innovations in Energy Storage
D845	3D Printing Revolutionizing Medical Device Manufacturing
D848	Breakthrough Innovations in Natural Flavors
D857	Future of Lightweight Metals in the Automotive Sector
D819	Novel Therapies for Rare and Genetic Diseases
D81F	Micro-LED <input type="checkbox"/> R&D Portfolio Analysis and Roadmapping
D847	Functional Coatings for Flexible Packaging: Technology Impact Assessment
D7F9	Innovations in Solid State Battery
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D849	Technologies Enabling Food Safety
D7EF	Technologies Enabling Nuclear Medicine Imaging
D82B	Material Technologies Shaping the Future of Electric Vehicles
D83B	2018 Top Technologies In Chemicals And Materials
D830	High Performance Polymers in Automotive and Aerospace Sectors
D7F4	Technologies Impacting the Future of Tight Oil Extraction
D807	Innovations in Transdermal Drug Delivery
D80D	Antimicrobial Technologies for Enhanced Consumer Health
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7E2	Alternate Feedstocks And Process Technologies For Conversion Of Gas To Chemicals
D7F5	Innovations in Computer Vision Applications Powered by AI
D7FB	Future of Transistor Technology
D7EC	Technology Breakthroughs Enabling Low-VOC Coatings
D7FI	Unraveling The Chinese Innovation Puzzle

# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

## UPCOMING RESEARCH

- Technical Fabrics in Filtration- Opportunity Assessment
- Enabling Technologies for Valorisation of Waste Streams from Oil & Gas Operations
- Emerging Opportunities for Nanoemulsions
- Global Benchmarking of Sustainability Trends in the Industrial Sector
- Emerging Innovations Transforming Upstream Oil & Gas Industries
- Augmented Analytics: Future of Business Intelligence
- Game-changing Innovations Elevating Cardiovascular Care
- Medical Device Innovations Furthering FemTech
- Impact of Nanomaterials on the Performance of Medical Implants
- Compound Semiconductor: Roadmapping and Impact Assessment
- Light-based Manufacturing: Application and Opportunity Assessment
- Nanomanufacturing: Global Impact Assessment
- Assessment of Materials Start-up Ecosystem in India
- Disruptive Innovations in Enzymes
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Technology Breakthroughs in Alternatives to Sweeteners
- Emerging Technologies Advancing Carbon Capture, Utilization and Storage

# SENSORS & INSTRUMENTATION TECHNOLOGY

The need for low power, smaller, lighter sensors with enhanced performance attributes and minimal false alarms is driving innovations within the sensors space.

## RECENT RESEARCH

D856	Technology Convergence Transforming E-textiles
D87E	Technology Convergence Enabling Agriculture 2.0
D883	Technologies in Power Transmission and Distribution
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88A	Robotic Exoskeletons: Roadmapping and Impact Analysis
D88C	Breakthrough Sensor Innovations in Food and Beverage Sector
D89A	Redefining the Future of Mobility with Blockchain
D886	Incisionless Surgeries: Envisioning The Future of Surgical Technology
D88B	Automotive Sensors - Innovation Impact and Roadmapping
D89B	Autonomous Vehicles □ Application Landscape and Opportunity Assessment
D867	Emerging Opportunities for Conductive Polymers
D87B	Emerging Opportunities for Quantum Dots
D85D	Technology Breakthroughs in Zero-Friction Coatings
D87A	Measurement-while Drilling – Patenting and Technology Development Trends
D874	Emerging innovations in India
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D86B	Technology Innovations Enabling Precision Robotic Surgery
D86D	Technologies Enabling Smart Water Grid
D86E	Technology Convergence Enabling Future of Digital Work
D872	Emerging Sensor Technologies Impacting the Marine Sector
D879	Disruptive Opportunities for Intelligent Home Automation in India
D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D855	Sensor Innovations Driving Future of Aerospace and Defense

# SENSORS & INSTRUMENTATION TECHNOLOGY

## RECENT RESEARCH

D84C	Disruptive Technologies Transforming Digital Oil Field
D84D	Disruptive Opportunities for Cobots in Manufacturing
D854	Technology Convergence Enabling Homes of the Future
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D85A	Advancements in Marine Propulsion Technologies
D81A	Internet of Medical Things Enabling Hospitals of the Future
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81C	Digital Twin Transforming Manufacturing
D829	Emerging Technologies to Detect Freshness of Produce
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D82D	2018 Top Technologies in Sensors & Instrumentation
D81E	ICT Technologies Transforming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D80C	Technology Convergence Enabling Retail Process Automation
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7FB	Future of Transistor Technology

# SENSORS & INSTRUMENTATION TECHNOLOGY

## UPCOMING RESEARCH

- Impact Assessment of Robotics in the Logistics Sector
- Augmented Analytics: Future of Business Intelligence
- 5G: the Emerging Digital Frontier
- Game-changing Innovations Elevating Cardiovascular Care
- Medical Device Innovations Furthering FemTech
- Breakthrough Technologies Building Superior Hospital Infrastructure
- Technology Convergence Driving Smart Home Automation/Connected Living
- Drones: R&D Portfolio and Opportunity Analysis
- Nanomanufacturing: Global Impact Assessment
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Disruptive Technologies in Digital Health
- Internet of Transformation: Advancements in IoT
- Geospatial Intelligence Driving the Future of Smart Cities
- Imaging Innovations for Breast Cancer Diagnosis
- Semiconductor Lithography: Opportunity Assessment for Advanced Electronics
- Assessment of Electronics, Sensors, and Manufacturing Start-up Ecosystem in India
- FleXible Hybrid Electronics: R&D Portfolio and Opportunity Analysis
- Opportunities for Sensors in Digital Farming

# INFORMATION AND COMMUNICATION TECHNOLOGY

Frost & Sullivan's global team of industry experts continuously monitor game-changing technology areas such as big data, cloud computing, communication services, mobile & wireless communication space, IT applications & services, network security and unified communications markets.

## RECENT RESEARCH

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D87E	Technology Convergence Enabling Agriculture 2.0
D883	Technologies in Power Transmission and Distribution
D884	Quantum Computing - R&D Portfolio Analysis and Roadmapping
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88A	Robotic Exoskeletons: Roadmapping and Impact Analysis
D88C	Breakthrough Sensor Innovations in Food and Beverage Sector
D893	Envisioning the Next Generation Cybersecurity Practices
D87D	Distributed Energy: Impact of Blockchain on Energy Trading
D899	Turning Big Data to Smart Data: Emerging Opportunities
D89A	Redefining the Future of Mobility with Blockchain
D84E	Advancements in Wireless Communications for Transportation
D888	Digital Pathology: Roadmap to the Future of Medical Diagnosis
D86A	RNA Technologies Enabling Drug Discovery and Development
D886	Incisionless Surgeries: Envisioning The Future of Surgical Technology
D88B	Automotive Sensors - Innovation Impact and Roadmapping
D89B	Autonomous Vehicles <input type="checkbox"/> Application Landscape and Opportunity Assessment
D875	Hybrid Manufacturing: Technology Roadmapping and Opportunities
D815	Artificial Intelligence Revolutionizing the Pharmaceutical Industry
D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D86B	Technology Innovations Enabling Precision Robotic Surgery

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# INFORMATION AND COMMUNICATION TECHNOLOGY

## RECENT RESEARCH

D86D	Technologies Enabling Smart Water Grid
D86E	Technology Convergence Enabling Future of Digital Work
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D872	Emerging Sensor Technologies Impacting the Marine Sector
D879	Disruptive Opportunities for Intelligent Home Automation in India
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D855	Sensor Innovations Driving Future of Aerospace and Defense
D86C	Breakthrough Innovations in Energy Storage
D84C	Disruptive Technologies Transforming Digital Oil Field
D84D	Disruptive Opportunities for Cobots in Manufacturing
D854	Technology Convergence Enabling Homes of the Future
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D81D	Securing Connected and Autonomous Cars for a Smarter World
D827	Artificial Intelligence: Global Investment Analysis
D82A	Battery and Power Train Technologies for Electric Vehicles
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D81A	Internet of Medical Things Enabling Hospitals of the Future
D81C	Digital Twin Transforming Manufacturing
D829	Emerging Technologies to Detect Freshness of Produce
D83A	2018 Top Information and Communication Technologies
D81E	ICT Technologies Transforming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense



# INFORMATION AND COMMUNICATION TECHNOLOGY

## UPCOMING RESEARCH

- Impact Assessment of Robotics in the Logistics Sector
- Opportunities for Blockchain in Manufacturing
- Augmented Analytics: Future of Business Intelligence
- Technologies Transforming the Future of Digital Marketing
- 5G: the Emerging Digital Frontier
- Medical Device Innovations Furthering FemTech
- Breakthrough Technologies Building Superior Hospital Infrastructure
- Technology Convergence Driving Smart Home Automation/Connected Living
- Drones: R&D Portfolio and Opportunity Analysis
- Technologies Enabling Circular Economy
- Disruptive Technologies in Digital Health
- Blockchain: Global Investment Analysis
- Internet of Transformation: Advancements in IoT
- Cognitive Security: The New Global Imperative
- Geospatial Intelligence Driving the Future of Smart Cities
- Internet-delivered Therapies and Mobile Health Ushering a New Health Paradigm
- Antenna Technology: Application and Opportunity Assessment
- Opportunities for Sensors in Digital Farming
- Intelligent Automation Technologies Transforming Industrial Manufacturing

# MICROELECTRONICS TECHNOLOGY

Miniaturization, is a movement toward lower power consumption and the need for enhanced features that are driving innovations within the electronics sector.

## RECENT RESEARCH

D856	Technology Convergence Transforming E-textiles
D883	Technologies in Power Transmission and Distribution
D884	Quantum Computing - R&D Portfolio Analysis and Roadmapping
D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88A	Robotic Exoskeletons: Roadmapping and Impact Analysis
D89A	Redefining the Future of Mobility with Blockchain
D84E	Advancements in Wireless Communications for Transportation
D886	Incisionless Surgeries: Envisioning The Future of Surgical Technology
D88E	Metal 3D Printing Revolutionizing Modern Manufacturing
D894	Big Area Additive Manufacturing: Technology Adoption Assessment
D89B	Autonomous Vehicles □ Application Landscape and Opportunity Assessment
D867	Emerging Opportunities for Conductive Polymers
D87B	Emerging Opportunities for Quantum Dots
D85D	Technology Breakthroughs in Zero-Friction Coatings
D874	Emerging innovations in India
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D84F	Emerging Technologies in Printing
D86E	Technology Convergence Enabling Future of Digital Work
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D858	Breakthrough Innovations in Power Semiconductors
D855	Sensor Innovations Driving Future of Aerospace and Defense
D84D	Disruptive Opportunities for Cobots in Manufacturing
D81F	Micro-LED □ R&D Portfolio Analysis and Roadmapping

# MICROELECTRONICS TECHNOLOGY

## RECENT RESEARCH

D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D81A	Internet of Medical Things Enabling Hospitals of the Future
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81B	Developments in Photonic Integrated Circuits
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D82E	2018 Top Technologies in Microelectronics
D81E	ICT Technologies Transforming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D80C	Technology Convergence Enabling Retail Process Automation
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7FB	Future of Transistor Technology
D7FI	Unraveling The Chinese Innovation Puzzle
D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DB	Innovations Impacting Industrial Sensing
D7E6	Technology Roadmapping of Micro-LED Displays
D7E9	Innovations Empowering Social Robots
D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D7F3	Technologies Impacting the Future of Smart Cities

# MICROELECTRONICS TECHNOLOGY

## UPCOMING RESEARCH

- Impact Assessment of Robotics in the Logistics Sector
- Emerging Opportunities for Nanoemulsions
- Medical Device Innovations Furthering FemTech
- Compound Semiconductor: Roadmapping and Impact Assessment
- VCSEL Technology: Impact and Opportunity Assessment
- Technology Convergence Driving Smart Home Automation/Connected Living
- Drones: R&D Portfolio and Opportunity Analysis
- Nanomanufacturing: Global Impact Assessment
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Disruptive Technologies in Digital Health
- Geospatial Intelligence Driving the Future of Smart Cities
- Imaging Innovations for Breast Cancer Diagnosis
- Semiconductor Lithography: Opportunity Assessment for Advanced Electronics
- Assessment of Electronics, Sensors, and Manufacturing Start-up Ecosystem in India
- FleXible Hybrid Electronics: R&D Portfolio and Opportunity Analysis
- Antenna Technology: Application and Opportunity Assessment
- Electronics Manufacturing: Global Opportunity Analysis

# HEALTH & WELLNESS TECHNOLOGY

Frost & Sullivan provides an abundance of studies within a multitude of areas including genetic engineering, regenerative medicine, drug discovery and development, nanomedicine, nutrition, cosmetic procedures, pain and disease management and therapies, drug delivery, personalized medicine, and smart healthcare.

## RECENT RESEARCH

D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D899	Turning Big Data to Smart Data: Emerging Opportunities
D864	Disruptive Innovations in Natural Colors
D888	Digital Pathology: Roadmap to the Future of Medical Diagnosis
D86A	RNA Technologies Enabling Drug Discovery and Development
D887	Disruptive Innovations Redesigning Orthopedic Devices and Procedures
D88D	Microbiome Technologies Fueling Human Health and Wellness
D87C	Micro- and Nano- encapsulation: Technology Impact Analysis
D815	Artificial Intelligence Revolutionizing the Pharmaceutical Industry
D83E	Companion Diagnostics: Biomarker Platforms Enabling Precision Medicine
D874	Emerging innovations in India
D85E	Gene Editing and Gene Therapy Breakthroughs Propelling Mainstream Treatments
D845	3D Printing Revolutionizing Medical Device Manufacturing
D848	Breakthrough Innovations in Natural Flavors
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D819	Novel Therapies for Rare and Genetic Diseases
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D81A	Internet of Medical Things Enabling Hospitals of the Future
D849	Technologies Enabling Food Safety
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D80A	2018 Top Technologies in Health & Wellness
D81E	ICT Technologies Transforming the Future of Automotive Sector

# HEALTH & WELLNESS TECHNOLOGY

## RECENT RESEARCH

D83I	Healthcare Innovations in Emerging Economies
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D807	Innovations in Transdermal Drug Delivery
D80D	Antimicrobial Technologies for Enhanced Consumer Health
D7D8	Technologies Impacting the Future of Cybersecurity
D7F5	Innovations in Computer Vision Applications Powered by AI
D7FI	Unraveling The Chinese Innovation Puzzle
D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DF	Artificial Intelligence and Advanced Analytics in Healthcare
D7EA	Breakthrough Delivery Technologies For Flavors And Fragrances
D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D7F3	Technologies Impacting the Future of Smart Cities
D78C	Emerging Opportunities for Self-Healing Materials
D7DA	Advanced Analytics: Disruptive Opportunities
D7ED	Technologies Enabling Intelligent Robotics
D7F0	Materials Innovations Transforming 3D Printing
D7CB	Technologies Driving Precision Medicine
D7B2	Breakthroughs in Leveraging Biomarkers for Oncology
D7D0	Technology Innovations for Patient Engagement
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7CC	Innovations in Liquid Biopsy Techniques for Cancer Management
D7CD	The Emerging Global Marketplace for Intellectual Property (IP)
D7CA	Technologies Driving Clinical Trial Management

# HEALTH & WELLNESS TECHNOLOGY

## UPCOMING RESEARCH

- Emerging Opportunities for Nanoemulsions
- Breakthroughs in Non-Alcoholic Steatohepatitis Management
- Emerging Opportunities in Synthetic Biology Platforms
- Augmented Analytics: Future of Business Intelligence
- Game-changing Innovations Elevating Cardiovascular Care
- Medical Device Innovations Furthering FemTech
- Impact of Nanomaterials on the Performance of Medical Implants
- Technology Convergence Driving Smart Home Automation/Connected Living
- Disruptive Innovations in Enzymes
- Technology Breakthroughs in Alternatives to Sweeteners
- Disruptive Technologies in Digital Health
- Technological Advances in Biobetter and Biosimilar Platforms
- Technological Advances Enabling Stem Cells Reprogramming
- Blockchain: Global Investment Analysis
- Internet of Transformation: Advancements in IoT
- Internet-delivered Therapies and Mobile Health Ushering a New Health Paradigm
- Advances and Emerging Technologies in Interventional Radiology
- Imaging Innovations for Breast Cancer Diagnosis

# MEDICAL DEVICES AND IMAGING TECHNOLOGY

Frost & Sullivan's research covers cutting-edge global developments within the medical devices and imaging sectors. Industry divisions such as biosensors, biomaterials, biomechanics, microtechnologies, nanotechnologies, assistive technologies, imaging technologies and platforms.

## RECENT RESEARCH

D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88A	Robotic Exoskeletons: Roadmapping and Impact Analysis
D888	Digital Pathology: Roadmap to the Future of Medical Diagnosis
D886	Incisionless Surgeries: Envisioning The Future of Surgical Technology
D887	Disruptive Innovations Redesigning Orthopedic Devices and Procedures
D85D	Technology Breakthroughs in Zero-Friction Coatings
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D86B	Technology Innovations Enabling Precision Robotic Surgery
D845	3D Printing Revolutionizing Medical Device Manufacturing
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D844	Innovations in Pain Management: A Technology Blueprint to Counter Opioid Addiction
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D81A	Internet of Medical Things Enabling Hospitals of the Future
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D7EF	Technologies Enabling Nuclear Medicine Imaging
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D821	2018 Top Technologies in Medical Devices & Imaging
D831	Healthcare Innovations in Emerging Economies
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D807	Innovations in Transdermal Drug Delivery
D80D	Antimicrobial Technologies for Enhanced Consumer Health



# MEDICAL DEVICES AND IMAGING TECHNOLOGY

## RECENT RESEARCH

D7D8	Technologies Impacting the Future of Cybersecurity
D7FB	Future of Transistor Technology
D7FI	Unraveling The Chinese Innovation Puzzle
D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DF	Artificial Intelligence and Advanced Analytics in Healthcare
D7E9	Innovations Empowering Social Robots
D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D78C	Emerging Opportunities for Self-Healing Materials
D7E1	Image Guidance and Navigation Technologies for Robotic Surgery
D7D6	Data Storage Technologies of the Future
D7CB	Technologies Driving Precision Medicine
D78D	Advances in Anti Fouling Coatings
D7B2	Breakthroughs in Leveraging Biomarkers for Oncology
D7D0	Technology Innovations for Patient Engagement
D7D5	Rapid Charging Technology Empowering Small-Scale Electronics
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7CC	Innovations in Liquid Biopsy Techniques for Cancer Management
D7CA	Technologies Driving Clinical Trial Management
D7D9	Novel Biomaterials for Medical Applications
D6EB	Future of Thermoelectric Energy Harvesting
D7B3	Microbiome Technologies Energizing Pharma and Life Sciences
D7AD	Cyber Security Innovations in the Connected World
D7C8	Top Technologies in Medical Devices & Imaging, 2017

# MEDICAL DEVICES AND IMAGING TECHNOLOGY

## UPCOMING RESEARCH

- Breakthroughs in Non-Alcoholic Steatohepatitis Management
- Emerging Opportunities in Synthetic Biology Platforms
- Augmented Analytics: Future of Business Intelligence
- Game-changing Innovations Elevating Cardiovascular Care
- Medical Device Innovations Furthering FemTech
- Breakthrough Technologies Building Superior Hospital Infrastructure
- Impact of Nanomaterials on the Performance of Medical Implants
- Nanomanufacturing: Global Impact Assessment
- Emerging Opportunities for Aerogels
- Disruptive Technologies in Digital Health
- Technological Advances Enabling Stem Cells Reprogramming
- Internet-delivered Therapies and Mobile Health Ushering a New Health Paradigm
- Advances and Emerging Technologies in Interventional Radiology
- Imaging Innovations for Breast Cancer Diagnosis
- FleXible Hybrid Electronics: R&D Portfolio and Opportunity Analysis
- Sensor Innovations Transforming Healthcare Sector
- Metal Foams- Technology Opportunity Assessment
- Innovations in Biomarker Analytics: Deriving Actionable Insights from the Data Deluge
- Precision Immunotherapy Innovations Transforming Human Health and Wellness
- Emerging Microbiome Technologies for Pharmaceutical Applications

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

The Advanced Manufacturing & Automation (AMA) cluster covers technologies that enable clean, lean and flexible manufacturing and industrial automation.

## RECENT RESEARCH

D889	Technologies with High Funding: Impact Assessment and Growth Opportunities
D88A	Robotic Exoskeletons: Roadmapping and Impact Analysis
D899	Turning Big Data to Smart Data: Emerging Opportunities
D88E	Metal 3D Printing Revolutionizing Modern Manufacturing
D894	Big Area Additive Manufacturing: Technology Adoption Assessment
D89B	Autonomous Vehicles □ Application Landscape and Opportunity Assessment
D875	Hybrid Manufacturing: Technology Roadmapping and Opportunities
D874	Emerging innovations in India
D84F	Emerging Technologies in Printing
D86B	Technology Innovations Enabling Precision Robotic Surgery
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D879	Disruptive Opportunities for Intelligent Home Automation in India
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D845	3D Printing Revolutionizing Medical Device Manufacturing
D84D	Disruptive Opportunities for Cobots in Manufacturing
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81C	Digital Twin Transforming Manufacturing
D82C	2018 Top Technologies in Advanced Manufacturing and Automation
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D80B	AI Innovations in Future of Manufacturing

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

## RECENT RESEARCH

D7D8	Technologies Impacting the Future of Cybersecurity
D7F5	Innovations in Computer Vision Applications Powered by AI
D7F6	Industrial Waste Water Recovery and Reuse Technologies
D7FB	Future of Transistor Technology
D7D2	Emission Control Technologies In Automotive & Transportation
D7EC	Technology Breakthroughs Enabling Low-VOC Coatings
D74D	Innovations in Smart Glazing
D7FI	Unraveling The Chinese Innovation Puzzle
D7DB	Innovations Impacting Industrial Sensing
D7E3	Manufacturing Technologies Empowering Automotive Lightweighting
D7F3	Technologies Impacting the Future of Smart Cities
D7DE	Emerging Innovations in Adhesive Technologies
D7D6	Data Storage Technologies of the Future
D7DA	Advanced Analytics: Disruptive Opportunities
D7E8	Advanced Safety Technologies Empowering Mobility
D7ED	Technologies Enabling Intelligent Robotics
D7F0	Materials Innovations Transforming 3D Printing
D7D4	IIoT Driving Manufacturing Innovations
D7DC	Power Infrastructure Technologies of the Future
D7D3	Emerging Robotic Technologies for Marine Applications
D7D1	Emerging Technologies for Defense
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7BC	Disruptive Manufacturing Technologies for Consumer Goods
D6EB	Future of Thermoelectric Energy Harvesting

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

## UPCOMING RESEARCH

- Impact Assessment of Robotics in the Logistics Sector
- Opportunities for Blockchain in Manufacturing
- Additive Manufacturing for Series Production: Opportunity Analysis
- Technical Fabrics in Filtration- Opportunity Assessment
- Global Benchmarking of Sustainability Trends in the Industrial Sector
- Augmented Analytics: Future of Business Intelligence
- 5G: the Emerging Digital Frontier
- Impact of Nanomaterials on the Performance of Medical Implants
- Technology Convergence Driving Smart Home Automation/Connected Living
- Light-based Manufacturing: Application and Opportunity Assessment
- Nanomanufacturing: Global Impact Assessment
- Emerging Opportunities for Aerogels
- Opportunity Assessment of Graphene OXide
- Blockchain: Global Investment Analysis
- Internet of Transformation: Advancements in IoT
- Geospatial Intelligence Driving the Future of Smart Cities
- Semiconductor Lithography: Opportunity Assessment for Advanced Electronics

## GLOBAL GROWTH OPPORTUNITIES

Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today's market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies?

FOR MORE INFORMATION CONTACT:

[enquiries@frost.com](mailto:enquiries@frost.com)

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