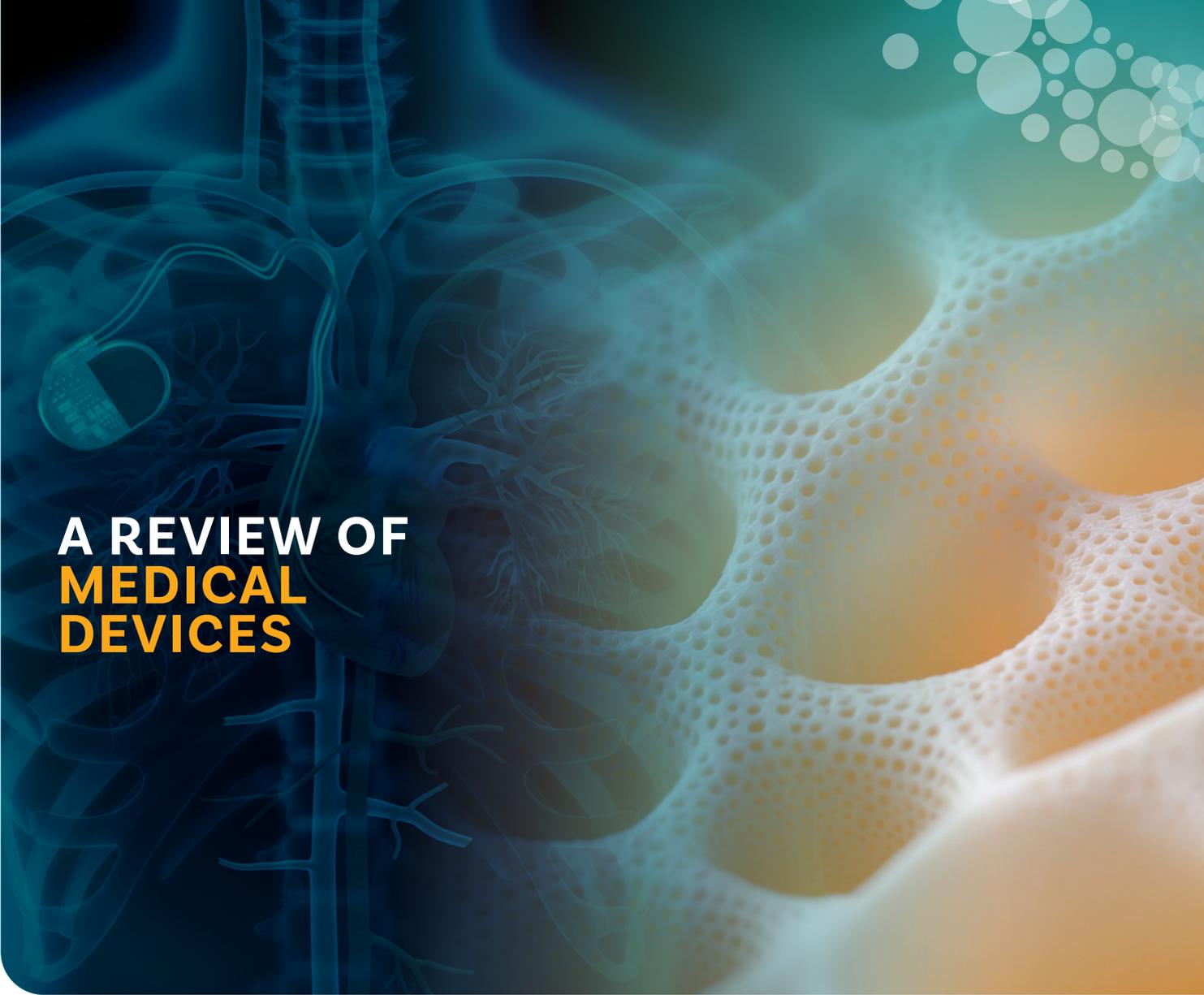


Research
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A REVIEW OF MEDICAL DEVICES



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ADVANCED MATERIALS

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AN INTRODUCTION

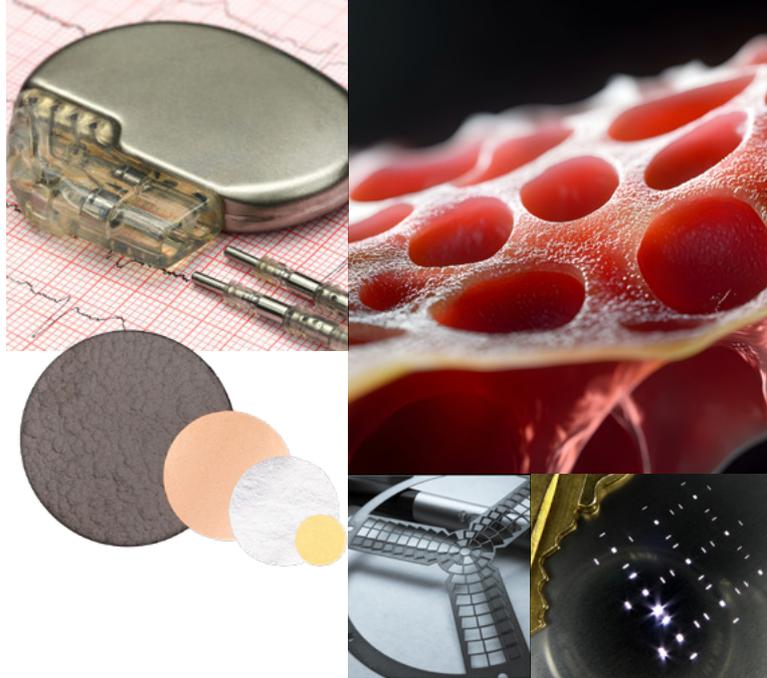
The rapid advancement of medical technology necessitates the exploration of innovative materials to revolutionise healthcare.

Goodfellow is committed to delivering advanced materials that tackle diverse medical challenges. With a comprehensive portfolio, we support the development of next-generation biomedical devices, improving patient care and driving medical research forward.

INNOVATION:

BioHastalex®, the biocompatible grade of Hastalex®, is an advanced graphene-based nanocomposite designed for biomedical applications. It combines functionalized graphene oxide (FGO) with polycarbonate urethane (PCU), providing remarkable strength, flexibility, and hydrophobicity. BioHastalex® is engineered to degrade over time within the body, ensuring biocompatibility and non-toxicity, while its inherent antibacterial properties make it suitable for medical use.

This innovative material is utilized in tissue engineering, regenerative medicine, biosensing, and implantable devices, with applications ranging from creating scaffolds for skin and nerve regeneration to developing cardiac patches, polymeric heart valves etc. Additionally, BioHastalex® is being explored for non-medical uses such as textiles, automotive, aerospace, agricultural technology, and defence.



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OTHER MATERIALS:

METALS

Titanium (Ti) & Titanium Alloys

(e.g., Ti-6Al-4V) – Used in implants (hip replacements, dental implants) due to biocompatibility, corrosion resistance, and strength-to-weight ratio.

Stainless Steel

(316L, 304L) – Common in surgical instruments, orthopedic implants, and stents for its high strength, corrosion resistance, and cost-effectiveness.

Nickel-Titanium (Nitinol)

A shape-memory alloy ideal for stents, guidewires, and orthodontic wires due to its superelasticity.

Gold (Au) & Platinum (Pt)

Used in pacemakers, electrodes, and dental applications due to their excellent conductivity and biocompatibility.

Silver (Ag)

Antimicrobial coatings for catheters and wound dressings to prevent infections.

Tantalum (Ta)

A highly biocompatible and corrosion-resistant material, ideal for bone implants, stents, and orthopedic prostheses, where osseointegration is essential.

Palladium (Pd)

Commonly used in dental alloys for crowns and bridges.

Iridium (Ir)

Due to its exceptional corrosion resistance, often found in pacemaker electrodes and neurostimulation devices.

Tungsten (W) & Tungsten Alloys

(e.g. W-Re alloy) serve critical functions in radiation shielding for X-ray and CT scanners, as well as in surgical instruments and guidewires due to their strength and wear resistance.



POLYMERS

Polyethylene (UHMWPE)

Used in joint replacements for its low friction and wear resistance.

Polytetrafluoroethylene (PTFE, Teflon®)

Found in vascular grafts, catheters, and coatings for medical devices due to its non-reactive nature.

Polyetheretherketone (PEEK)

A high-performance polymer used in spinal implants and orthopedic applications due to strength and biocompatibility.

Poly(lactic Acid) (PLA)

Biodegradable polymer used in sutures and drug delivery systems.

Silicone

Used in prosthetics, tubing, and implants due to flexibility, durability, and biocompatibility.

CERAMICS & COMPOSITES

Zirconia (ZrO₂) & Alumina (Al₂O₃)

Used in dental and orthopedic implants for wear resistance and bioinert properties.

COMPOSITES

Carbon Fiber Composites

Used in prosthetics and orthopedic devices for their lightweight strength.



Why Goodfellow for your Medical Research

CHAMPIONING INNOVATION
SINCE 1946

Goodfellow has been supplying the needs of science and industry worldwide for over 75 years. We've made it our mission to always be one step ahead, offering one of the most comprehensive ranges on the market, while playing our part in creating the breakthroughs of tomorrow. This has seen us involved in many exciting projects, which have included the development of everything from cochlear implants to nuclear fusion. To ensure we stay at the forefront of material science, we're always expanding and improving our ranges and services.

We can supply research quantities with no minimum order quantity through to production volumes supported by our team of materials scientists. We are willing to take on projects to produce new materials and develop new processes to enable the development needed in emerging industries and applications.



- **No minimum order**
- **Over 175,000 advanced materials**
- **Supply Chain Management:**
 - Sourcing and manufacturing custom materials for your needs
- **Dispatched globally within 48 hours**
- **Materials customization:**
 - Custom parts for prototyping
 - Full product modification
 - Micro-machining
 - Microfabrication
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- **Free and fast delivery**
 - Worldwide shipping and customs clearance, to your door. All orders are dispatched within 48 hours
- **Commercial arrangements:**
 - Call off orders
 - Buffer stock
 - Fixed and contract pricing
 - Discounts for increased volumes

**We help you innovate
into the future.**



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