OTD: HYDI

HYDROMER INC

IMPROVING MEDICAL DEVICE PERFORMANCE BY SURFACE MODIFICATION COATINGS

HYDROMER™

Hydromer.com

HYDROMER™

ABOUT US

BASED IN CONCORD, NC, USA

SINCE 1980

FDA, GMP/ISO 13485, ISO 9001 CERTIFIED

OFFERS SURFACE COATING TECHNOLOGIES, SHIPPED TO A GLOBAL CUSTOMER BASE, R&D AND CONTRACT COATING SERVICES.

OUR LEADING-EDGE HYDROPHILIC COATINGS FOR MEDICAL DEVICE AND INDUSTRIAL PRODUCT APPLICATIONS ASSIST OUR CLIENTS TO DIFFERENTIATE FROM THEIR COMPETITION.

HYDROMER™

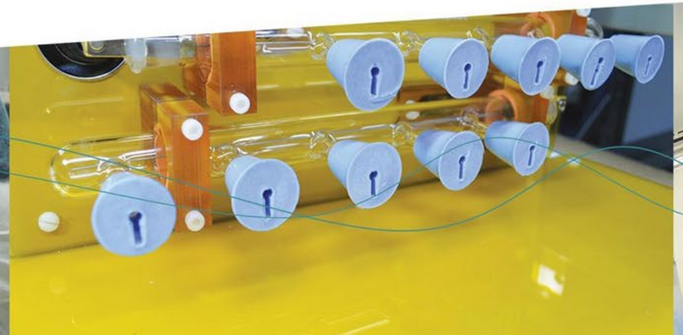
MEDICAL DEVICE COATING SERVICES

Our facility is capable of producing coated devices in volumes sufficient for clinical tests, through full production.

Once coated, devices can be delivered in bulk or assembled, packaged and sterilized with client labeling at our facility.

We can incorporate our client’s molecular entry into the client or Hydromer's coating formulas.

Hydromer also offers contract R&D, custom machine building and tech transfer services.



HYDROMER™

MEDICAL DEVICE COATING SOLUTIONS

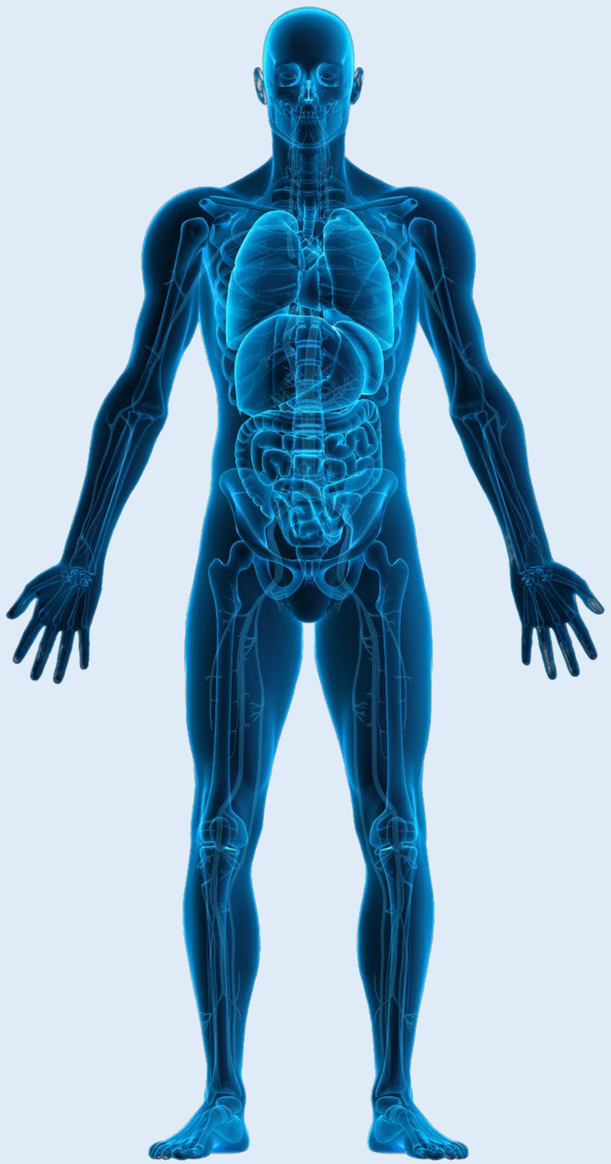
A complete suite of custom coatings, coating services and equipment, and turnkey operations for the medical market.

Our products are used on medical devices around the world and in every system of the body.

Our technologies add value by providing unsurpassed lubricity, thromboresistance, antimicrobial, platelet and protein adhesion reduction, non-leaching, low particulate, bio-compatibility and many other properties.

Our products are backed by an outstanding R&D, customer service and tech support capabilities.

HYDROMER™



MEDICAL DEVICES WE COAT

- Angioplasty balloon catheters
- Umbilical catheters
- Biliary and pancreatic stents
- Infusion microcatheters
- Cardiovascular micro catheters
- Central venous catheters
- Intraocular lens injectors
- Embolization delivery devices
- Liposuction devices
- Enteral feeding products
- Neurovascular microcatheters
- Female contraceptive devices
- PTCA catheters
- Foley catheters, urinary catheters
- Guide wires
- Hemodialysis catheters
- Interocular lens devices
- And many more

HYDROMER® THERMAL AND UV FORMULATIONS

Thermally-Cured

- 40+ Years of Proven Expertise: Benefit from over 40 years of proven expertise and market presence.
- Superior glide: Encounter unparalleled lubricity with our ultra slippery thermally cured coating.
- FDA-compliant MAF files: Ensure regulatory compliance with FDA approved Master Access Files (MAF) for peace of mind.
- Global recognition: Trusted and approved on medical devices sold around the world, particularly in key markets such as the US, Asia, and Europe.
- Versatile Application: Achieve superior hydrophilic coating results with options for both one-step coating and two-step primer systems, ensuring compatibility with diverse substrates and application requirements.

UV-Cured

- Cutting-edge technology: Harness the power of our new UV curable coating line.
- Tailored to Your Needs: Our coating system can be finetuned to seamlessly integrate with your existing processes, ensuring optimal performance and efficiency.
- Rapid curing: Achieve perfection in minutes with lightning-fast curing times.
- Versatile application: Coat a variety of substrates effortlessly, from plastics to metals and beyond.
- Precision curing: Utilize different UV wavelengths for impeccable results every time.
- Unrivaled durability: Enjoy long-lasting results with an ultra-durable coating.

UV-CURABLE HYDROPHILIC COATING EQUIPMENT

Hydrophilic Coating Equipment

Designed for efficient, automated mass production of coated medical devices

- Fully automated coating and UV curing
- Annual production capacity: **200,000 – 300,000 unit**
- Requires only 1-2 operators
- Five-stage variable-speed dipping for uniform coating
- Integrated with imported Dymax UV curing module
- User-friendly interface

Fully Automated Coating System

Hydromer designs end-to-end automated coating lines tailored to the specific requirements of each medical devices.

- Modular architecture for flexible configuration
- Annual production capacity up to **1 million units**
- Custom features such as **automatic straightening** for improved precision
- Suitable for high-volume production of catheters, balloon catheters, guidewires, urinary catheters and other interventional devices

Friction Testing Equipment

Hydromer's vertical and desktop friction testers are designed in strict accordance with accurate assessment of the lubricity and durability

- Compliant with industry standard YY/T 1898-2024
- Force measurement range: 0 – 2000 g
- **High-precision** controller for accurate measurement
- Windows-based control system
- Automatic test report generation
- Customizable force ranges and optional functions

jAqua® Hydrophilic Lubricious Coating

Functions:

- Lubricate the surface of medical devices by moisture absorption and retention.
- Reduce interface friction to ease passage of catheter through the blood vessel and avoid serious wear between interfaces.

Features:

Hydrophilic Lubricity

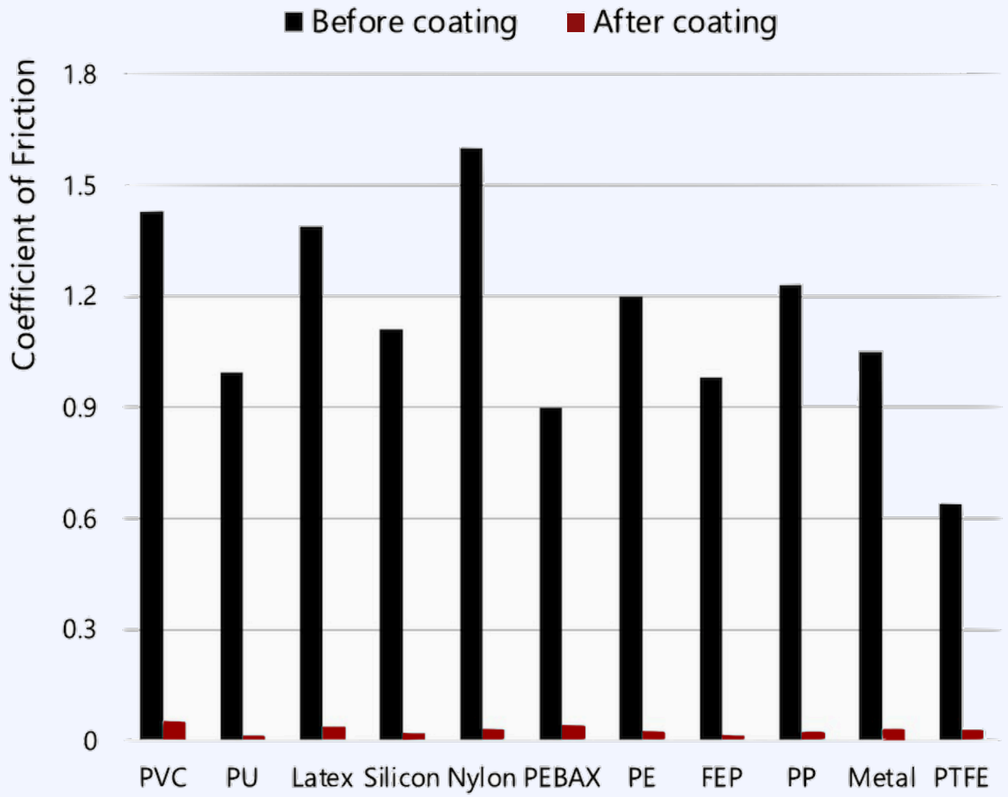
Good Biocompatibility

Good Stability

FRICTION TEST

before and after applying hydrophilic coating on different substrates.

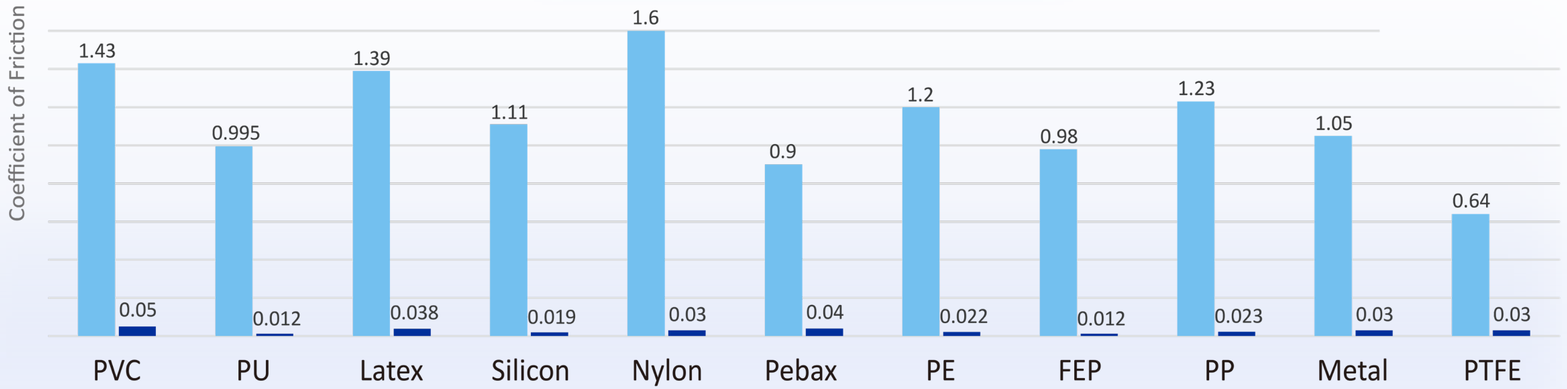
The Coefficient of Friction of various substrates is reduced by more than 95%.



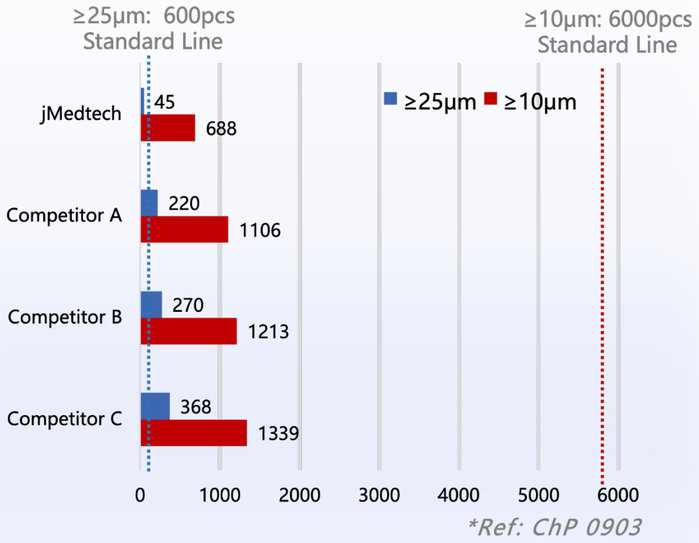
HYDROMER™

UV-CURABLE HYDROPHILIC COATING CAPABILITIES

Coating on Varied Substrates

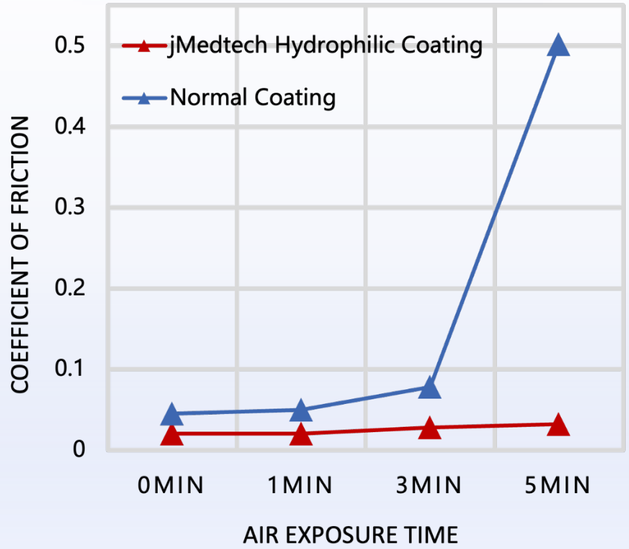


Minimal Particulate Release

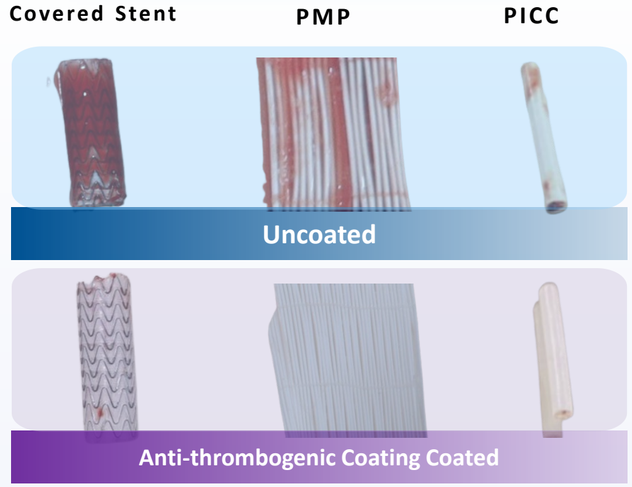


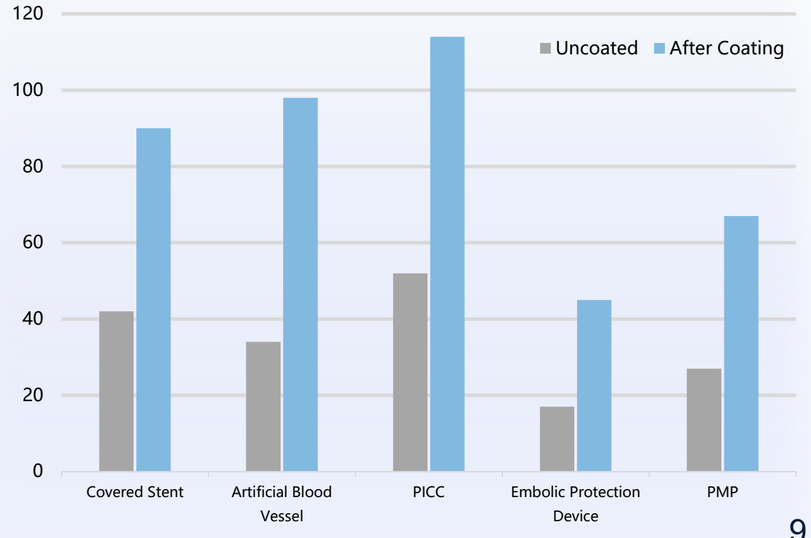
*Ref: ChP 0903

Sustained Lubricity



Anti-thrombogenic Coating



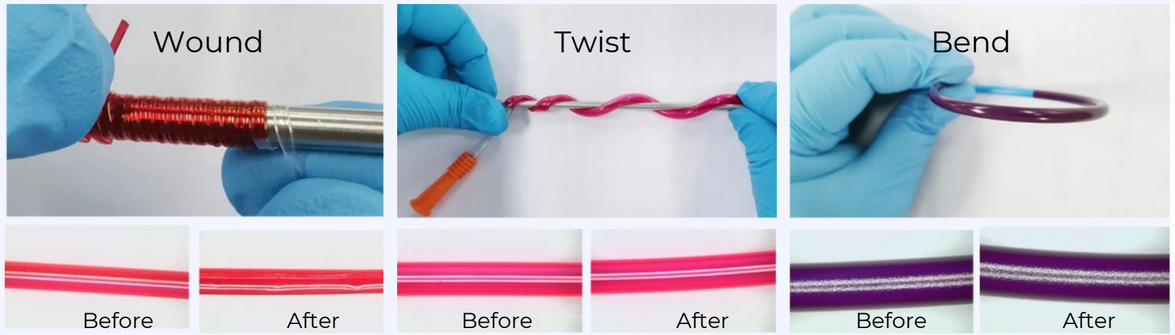


Clotting Time Before & After Coating/min

jAqua® Hydrophilic Lubricious Coating

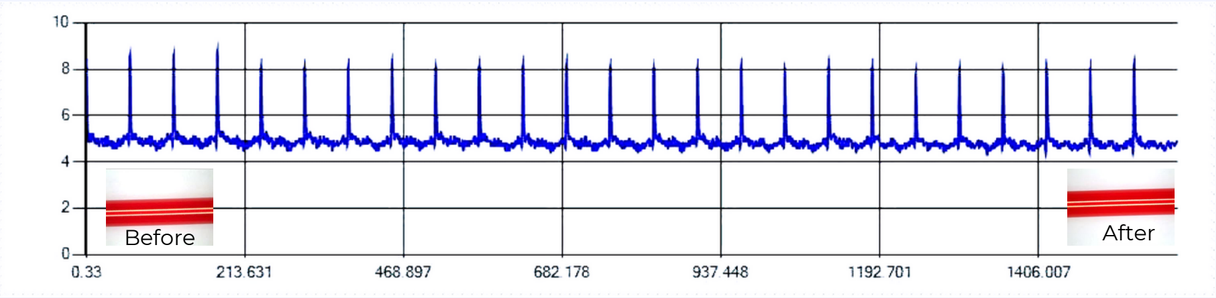
Coating Flexibility & Durability

- Flexible coating remains intact after wounding, twisting and bending
- Durable coating remains intact after 25 wear cycles frictional testing



Cyclic Frictional Testing (25 Cycles)

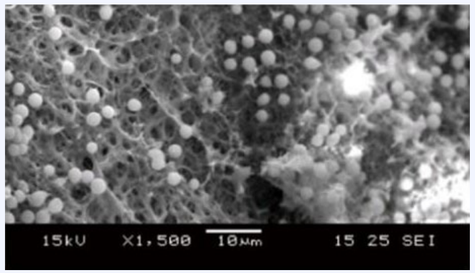
- Consistently high lubricity through cyclical friction testing
- Coating remains intact and uniform after cyclical friction testing



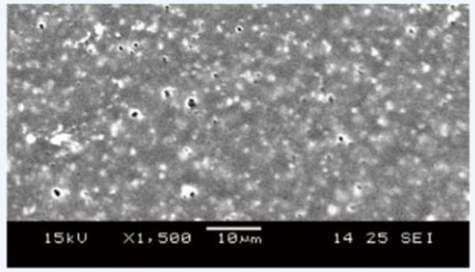
Hygea® Heparin Anticoagulant Coating

Functions:

- Prevents blood clot formation on device through the use of Heparin
- Bonded Heparin retains stability and anticoagulative properties especially in early implantation stages



Uncoated PU
Surface covered with platelets and fibrinogen



Hygea® Coated PU
Reduction in adhesion of platelets

Features:

Anti-Coagulation

Good Coating Stability

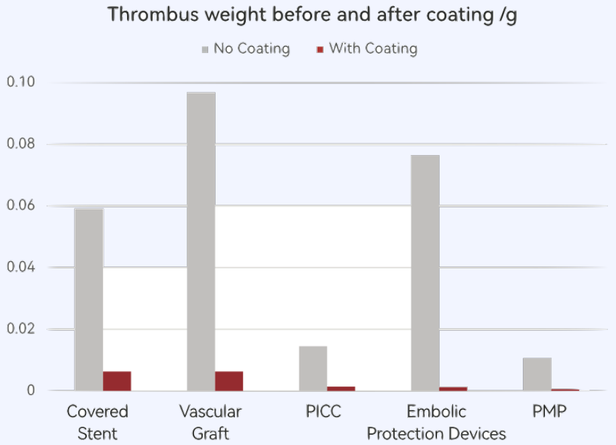
Long Anti-Coagulation Period

Grafted Stent

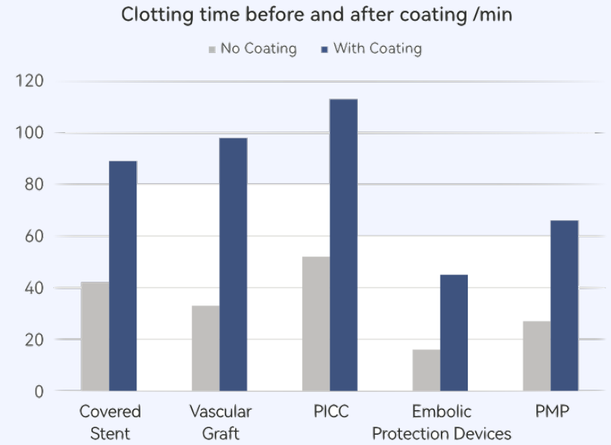
Uncoated

Hygea® Coated

Thrombosis reduced significantly



Clotting time extended significantly



Thrombus reduction rate of more than 90%

Coagulation time prolonged by more than 50%

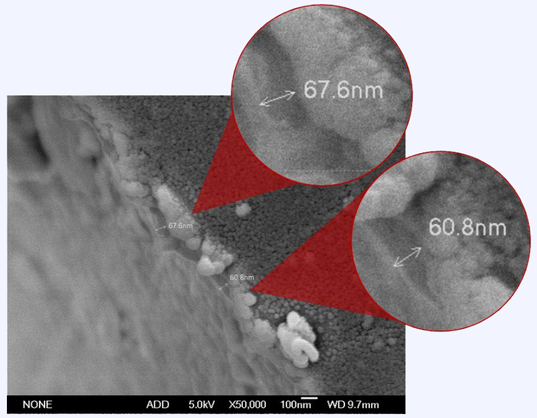
Click here for “Work-Flow Schematics”

jHemo PC® Phosphorylcholine Anticoagulant Coating

Functions:

- Prevents blood clot formation on device through the use of non-drug ingredient
- Coating (transient) or bonding (implantable) options available for various applications

Nano-scale PC coating



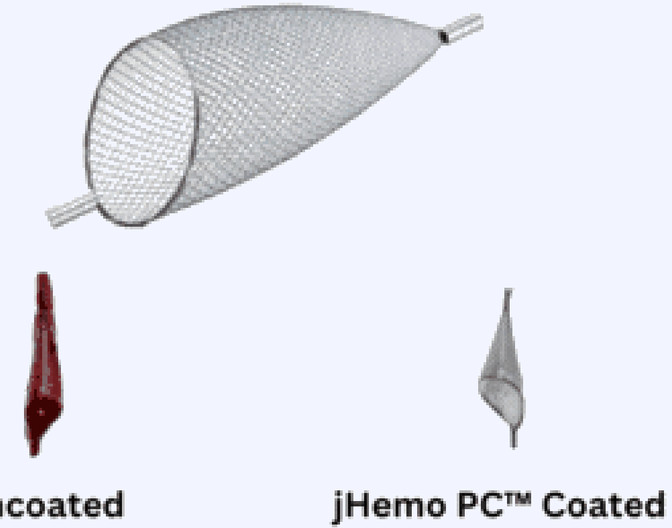
Features:

Anti-coagulation

Anti-adhesion

Anti-crystallization

Embolic Protection Device



Thrombus reduction rate of more than 90%
Coagulation time prolonged by more than 50%

Click here for “Work-Flow Schematics”

Click here for “Video and Process Equipment”

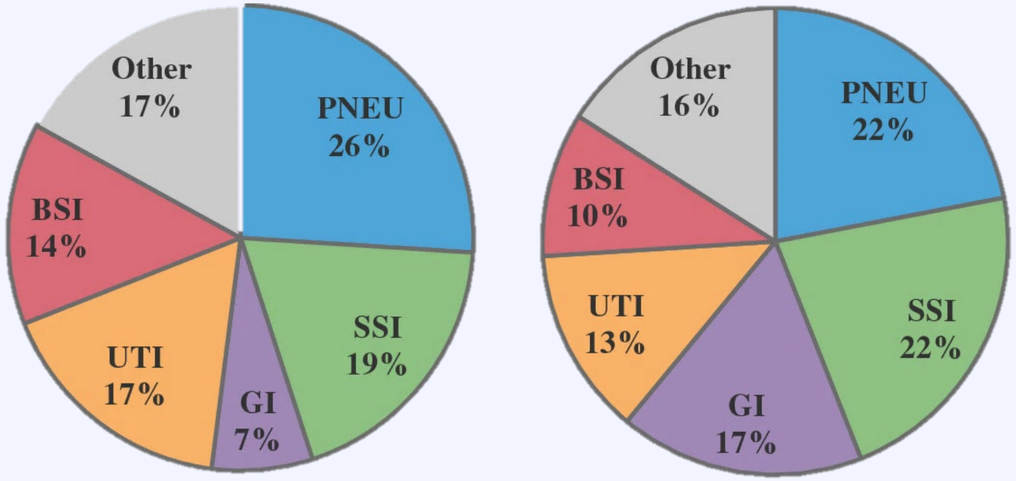
jGuard® Antimicrobial Coating

Purpose:

1. Reduces infections (HAIs, eg. CRBSI, CAUTI, VAT, VAP)
2. Reduces antibiotics usage
3. Reduces healthcare costs

- Healthcare Associated Infections (HAIs) are infections associated with the devices used in medical procedures, such as catheters or ventilators.
  - Central line-associated bloodstream infections (CRBSI)
  - Catheter-associated urinary tract infections (CAUTI)
  - Ventilator-associated pneumonia (VAP)

- Can result in serious complications that lead to patient suffering, increased mortality and healthcare costs



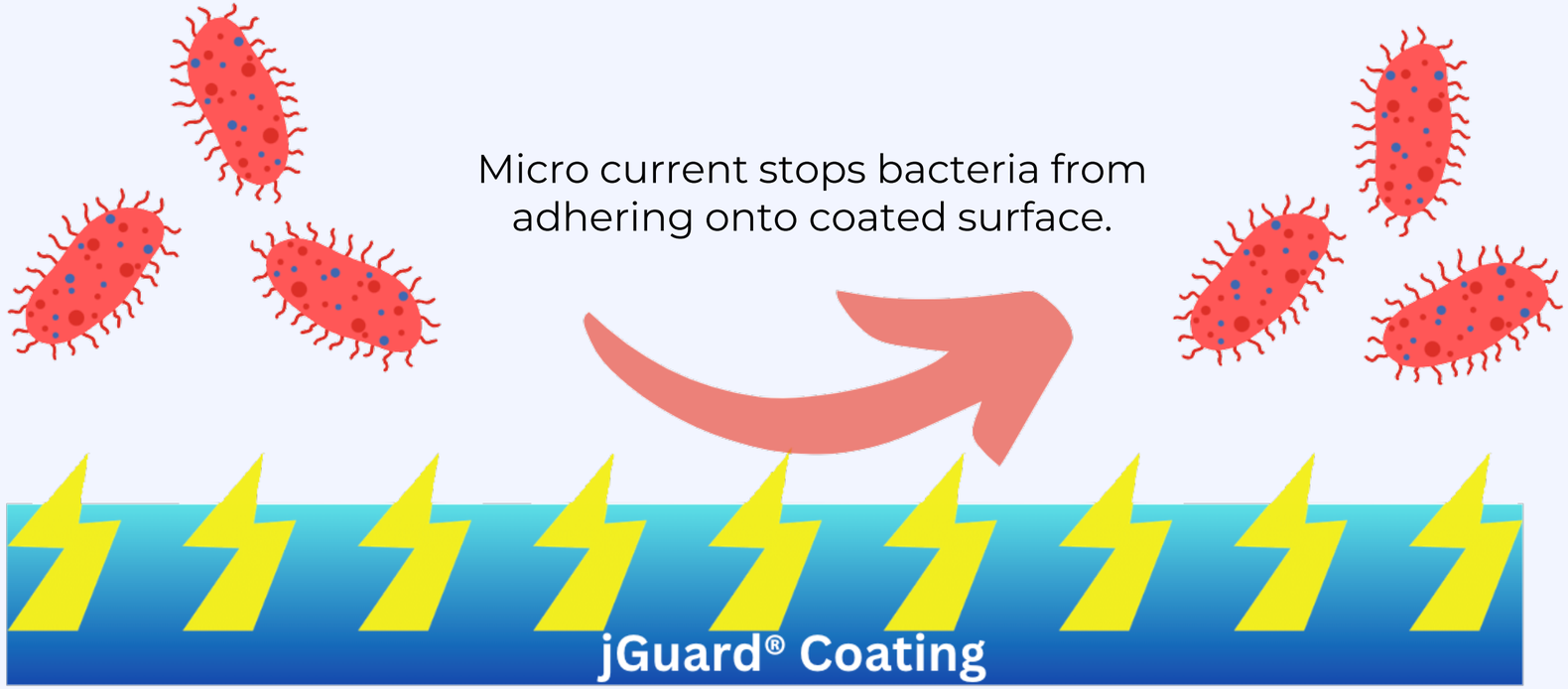
ECDC, Europe

CDC, USA

The most common types of healthcare associated infections (HAI) in Europe and the USA, 2018.
PNEU = Pneumonia,
SSI = Surgical Site Infection,
GI = Gastrointestinal Infection,
UTI = Urinary Tract Infection,
BSI = Blood Stream Infection.

jGuard® Antimicrobial Coating: Technology

- The noble metals in the jGuard® coating cause a galvanic effect, producing micro current to stop bacteria from adhering onto coated surface.
- Technology is tissue friendly and safe for patient use, without release of antimicrobial (potentially toxic/pharmacologic) substances
- jGuard® results in reduced bacterial adhesion, biofilm formation and leads to a reduced risk of infection.



jMedtech Vacuum Plasma Equipment

Functions:

- Provides cleaning, activation and etching effects on biomaterials to achieve the following:
  - Improving biocompatibility of medical devices
  - Improving hydrophilicity and wettability of treated material surface
  - Improving bonding between layers of biomaterials and coatings
  - Improving adhesion between soft and hard materials

Features:

Hydrophilic Lubricity

Improves Biocompatibility

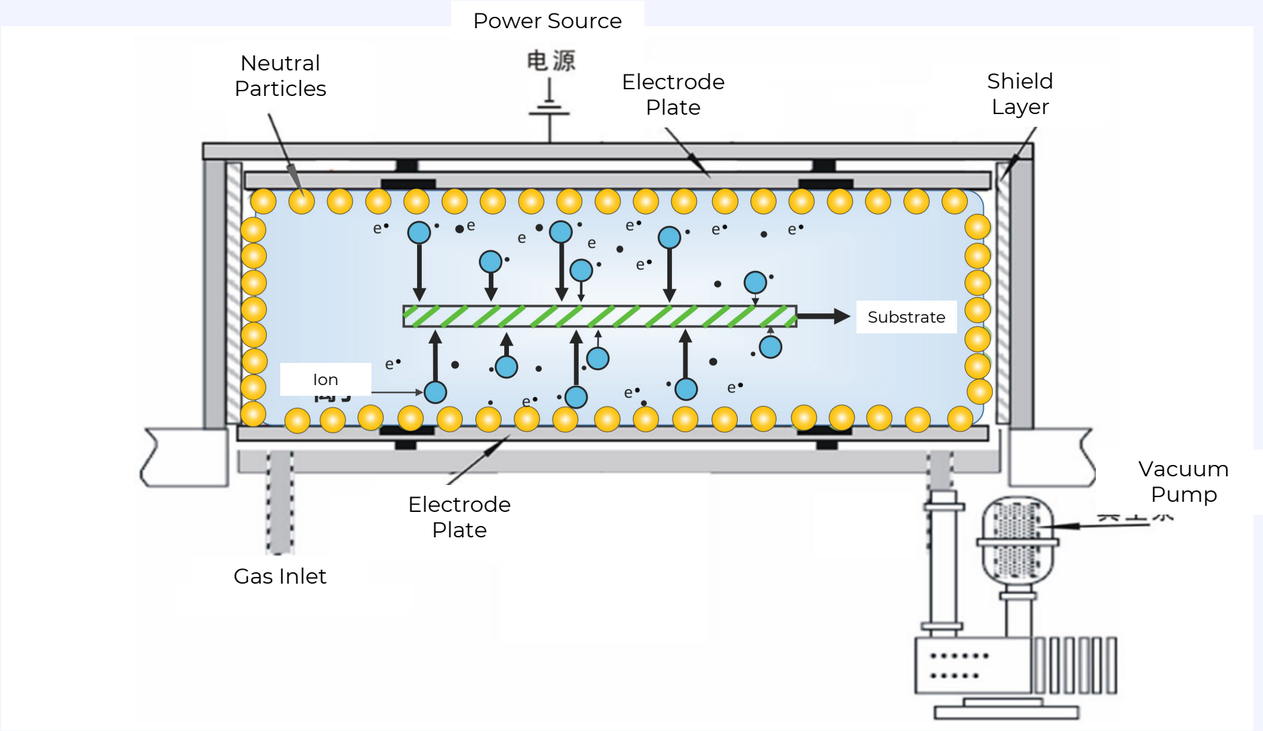
Improves Adhesivity

Applications:

jMedtech Vacuum Plasma Equipment: Working Principles

In a vacuum state within the plasma treatment chamber:
- Pressure decreases,
- Intermolecular spacing increases,
- Intermolecular forces diminishes

High-frequency sources is applied to generate a high-voltage alternating electric field, transforming various special process gases into highly reactive or high-energy plasma.



This plasma then reacts or collides with organic contaminants and particulate pollutants, forming volatile substances. These volatile substances are subsequently removed by the working gas flow and vacuum pump, achieving surface cleaning, activation, and other purposes, as illustrated in the figure.

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THANK YOU!