

Atomic Layer Deposition

Encapsulation of medical devices with nano coatings

Protect your medical devices with our innovative Atomic Layer Deposition (ALD) technology.

Our Atomic Layer Deposition (ALD) technology offers advanced nano coatings for medical devices. These biocompatible, conformal coatings improve device lifespan and reliability, even on complex 3D shapes.

Technology

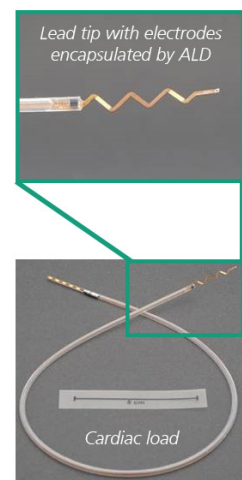
Scalable and post-CMOS-compatible coatings for the encapsulation of medical devices, such as sensors.

Customer Benefits

- Biocompatible protection of your device against humidity, body fluids and gases
- Conformal coatings on complex nano 3D shapes
- Miniaturized protection to enhance the life-cycle of your device

Advantages

- Additional encapsulation (e.g. polymers, titanium housing) not needed
- Enables encapsulation of ultra-small devices without mechanical interference
- Coating of individual devices and at wafer level



Macroscopic photograph of a cardiac lead with an ALD encapsulated acceleration sensor at the flexible tip for implantation.

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Materials at Fraunhofer IMS

Material	Temperature	Application
Al_2O_3	80 °C – 300 °C	Hermetic Encapsulation
Ta_2O_5	100 °C – 250 °C	Hermetic Encapsulation
TiO_2	100 °C – 300 °C	Hermetic Encapsulation
ZrO_2	200 °C – 300 °C	Hermetic Encapsulation
HfO_2	200 °C – 300 °C	Hermetic Encapsulation
ZnO	80 °C – 250 °C	Biocompatible Oxide
TiN	300 °C – 400 °C	Biocompatible Nitride
Ru	300 °C – 325 °C	Biocompatible Metal
MoS_2	100 °C	2D Biosensor Coating
WS_2	300 °C – 350 °C	2D Biosensor Material

Contact and further information

Business Unit Health
sales@ims.fraunhofer.de

Fraunhofer Institute for Microelectronic
Circuits and Systems IMS
Finkenstraße 61
47057 Duisburg

