



## An innovative company that will be responsible for the healthy life of humankind

This medical solution company with the use of plasma established in a KAIST lab in 2015 was selected as Soon-to-be Unicorn, one of the 100 Materials · Parts · Equipment Startups, and innovative medical device company, etc. based on its outstanding technical skills in plasma.

It has been recognized for its technology as filing about 158 patents so far, being awarded in Korea Technology Awards, and exporting its technologies reliable in the prevention · rehabilitation medical industry to around 50 countries.

Based on smart corporate culture and innovative thinking, it continues to develop mutual-respect culture with all the employees' open-minded thinking and values.



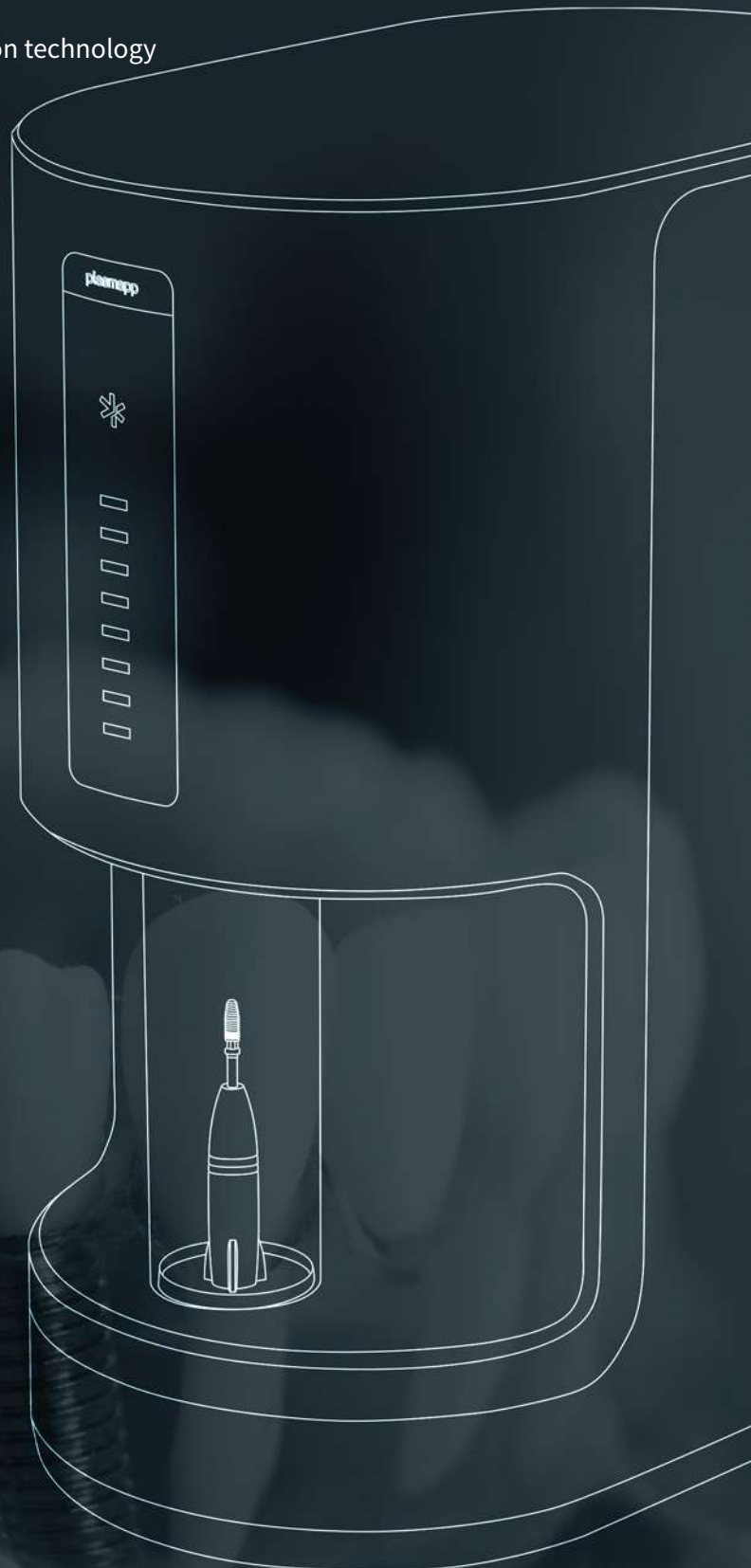
Trusted Safeguard for all medical  
devices around the world

\***plasmapp**

# ACTILINK™

## Regenerative Activation

Plasma-used biological regenerative activation technology



# SAFE and Bio-Compatible Surface Plasma Regenerative Activator for Implant



Improving  
Hydrophilicity



Clean  
Surface



Simple  
Operation

for Dental Implant

for Orthopedic Implant



ACTILINK Mini



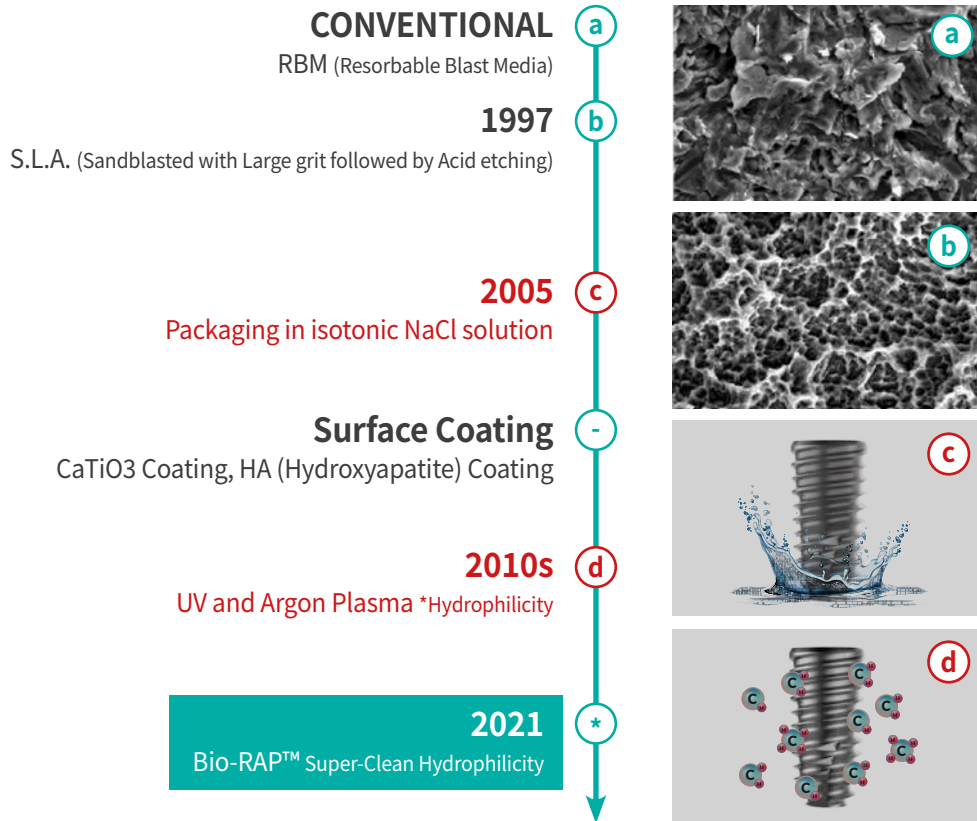
ACTILINK Motion



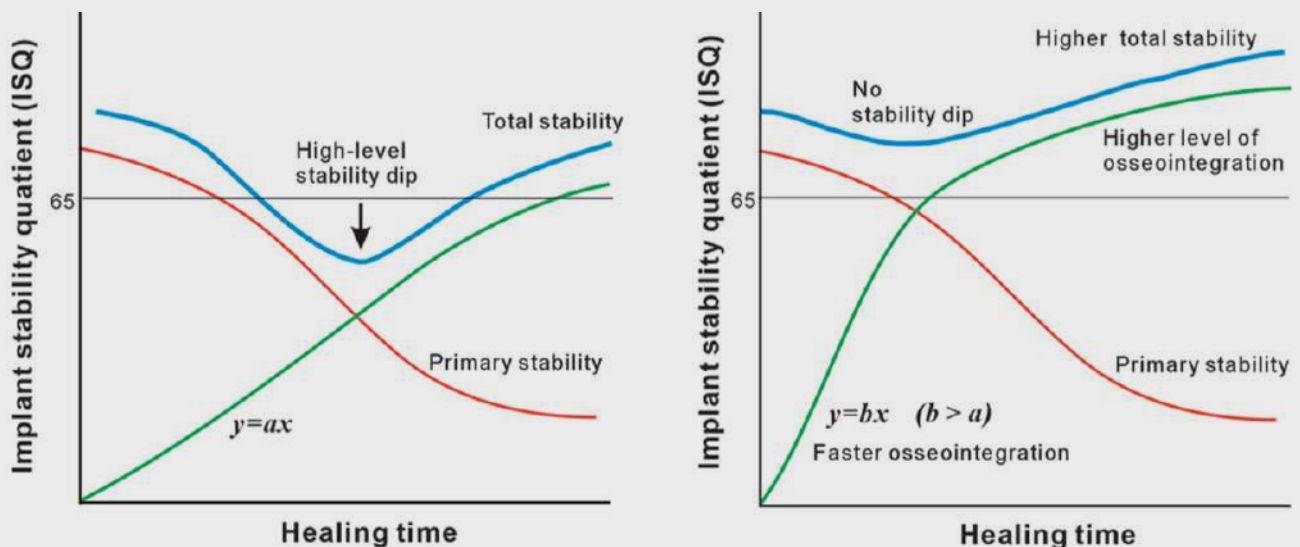
ACTILINK STEM & CUP

# Technologies developed to shorten healing time and enhance stability

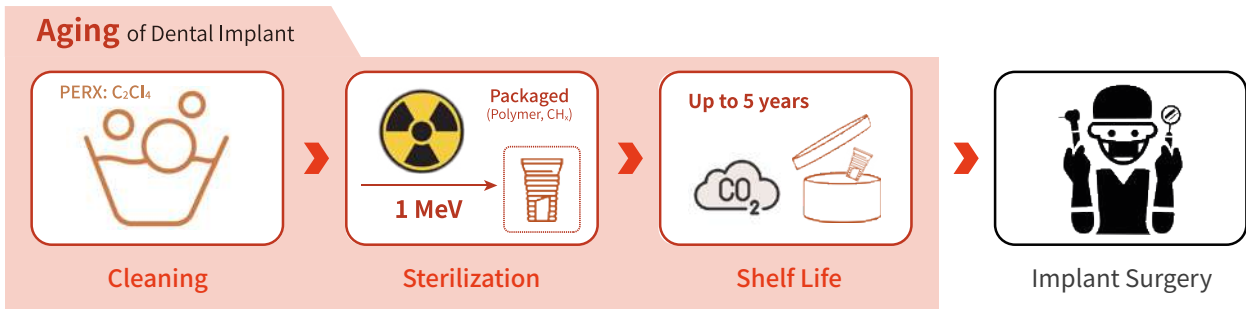
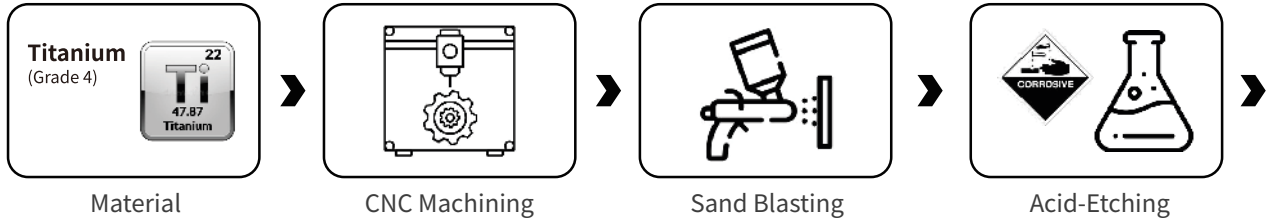
For more than 20 YEARS, the S.L.A. is used to be standard with some variations in Dental Applications.



## Higher Osseointegration performance with Higher Survival Rate

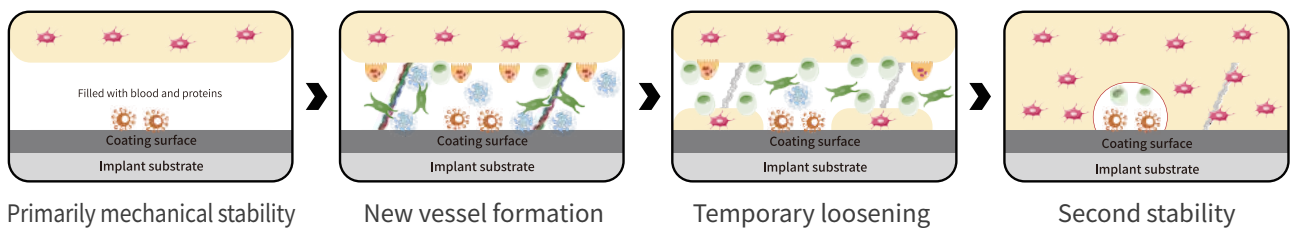


# Issues related with hydrocarbon contamination on surface of implant



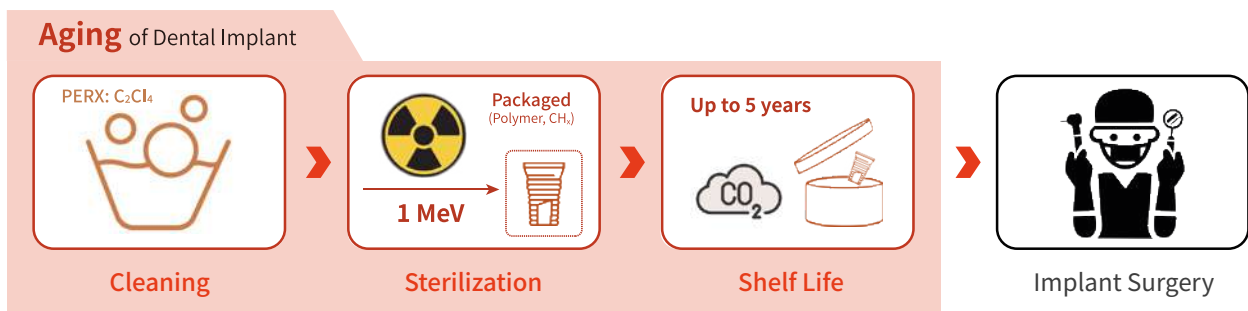
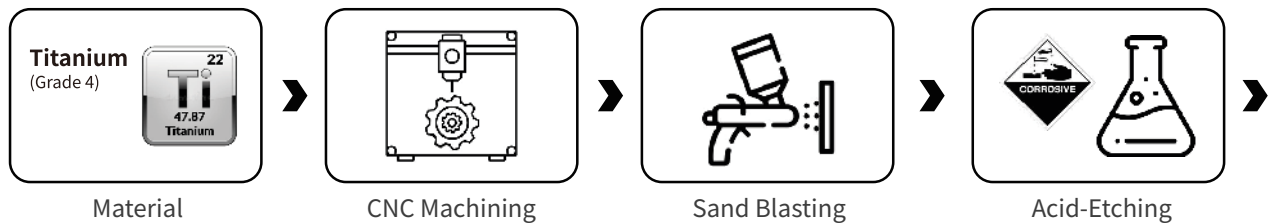
**Aging of Dental Implant**  
 Progressive accumulation of Contaminants  
 Hydrocarbon and Microorganism

**Contaminants:** Obstacle for osteoblast and fibroblast



- Osteocyte** : Oblate shaped type of bone cell (found in mature bone tissue)
- Osteoclast** : A type of bone cell (found on bone surface during bone resorption)
- Osteoblast** : A single nucleus synthesize bone (functioning bone formation in groups of other cells)
- Fibroblast** : Biological cell synthesizing the extracellular matrix and collagen (Critical role in wound healing)
- Collagen** : Structural protein in the extracellular matrix (Found in various connective tissues)
- Leucocyte** : White blood cell of the immune system (protecting body against both infectious disease and foreign invaders)

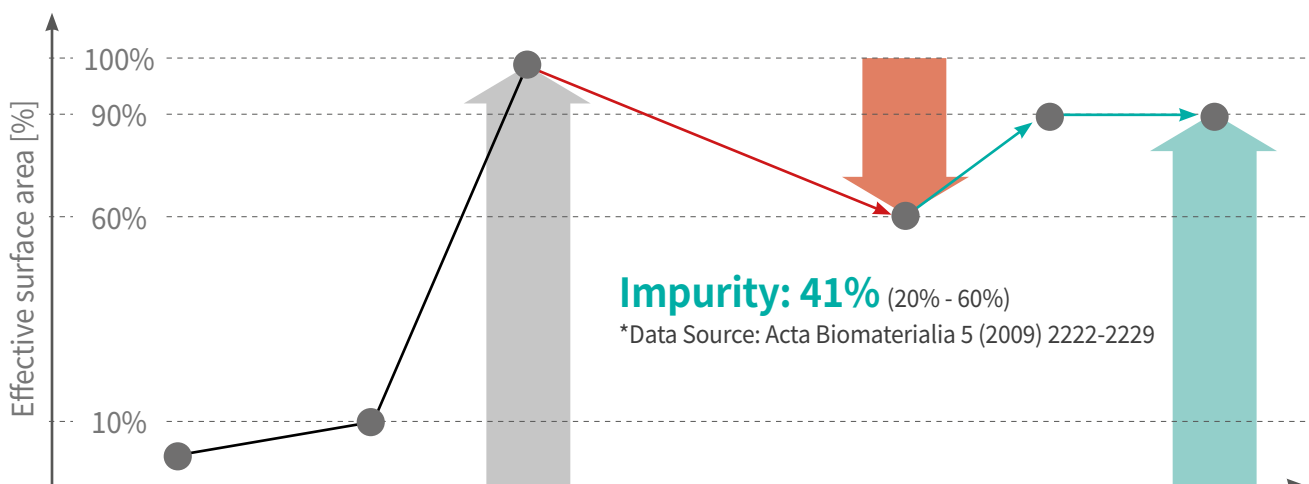
# Process of Contamination and Regenerative activation



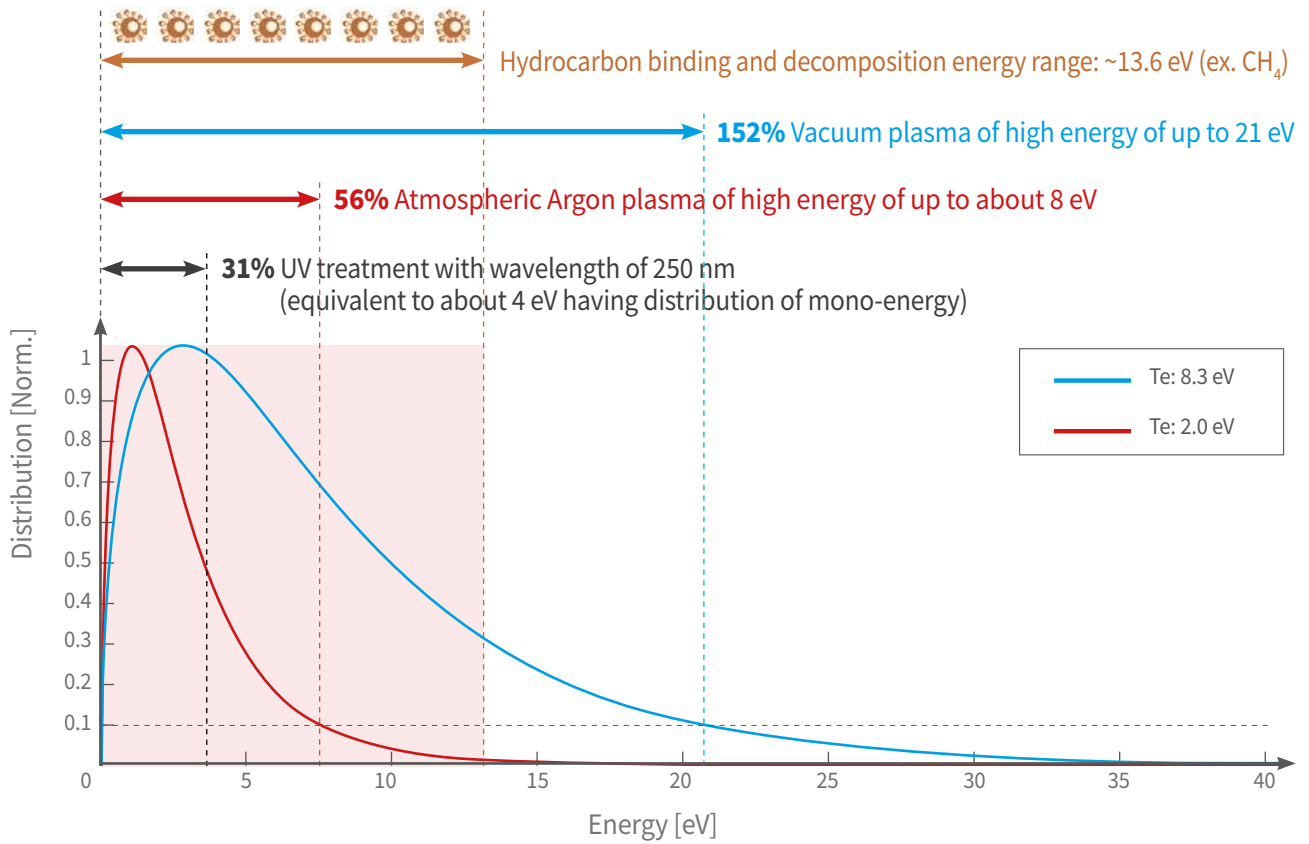
## Plasma Activation

Plasma regenerative activation immediately before implant surgery

1. S.L.A. treatment generates micro-structure on the implant surface to increase effective surface area ► **100%**
2. The implant surface is contaminated by the cleaning, sterilization and shelf life to decrease effective surface area ► **60%**
3. The contaminants are eliminated to regenerate effective surface area and to be delivered to patient under vacuum condition ► **90%**



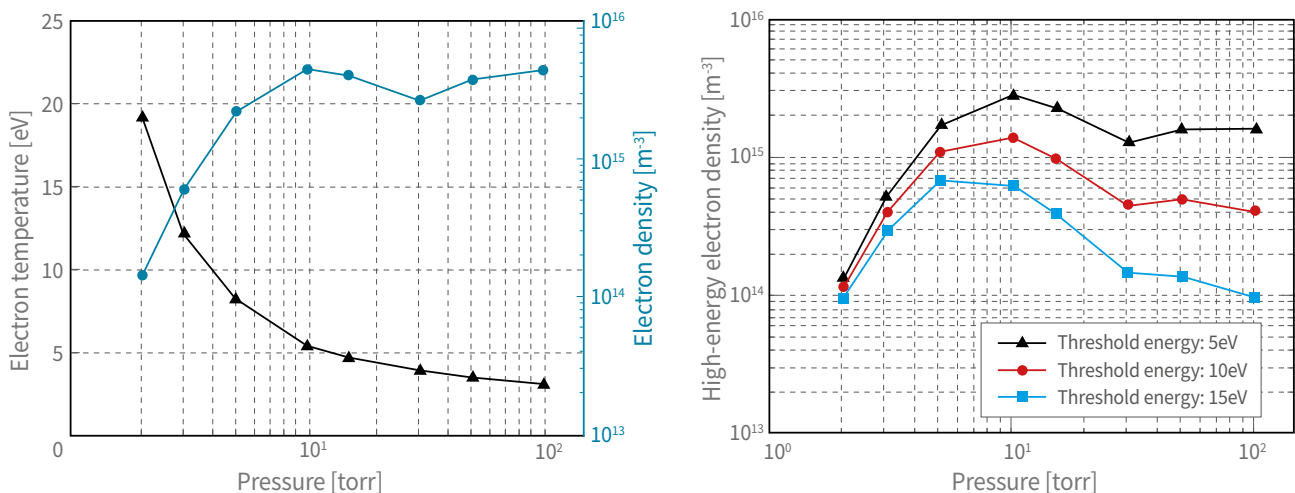
# What can be a solution for removing the hydrocarbon contamination?



## Optimized plasma discharge conditions for maximizing treatment efficiency

Electron temperature decreases as pressure increases, and plasma density has the opposite behavior. The optimized condition for maximizing treatment efficiency is obtained to be 5 torr for ACTILINK™.

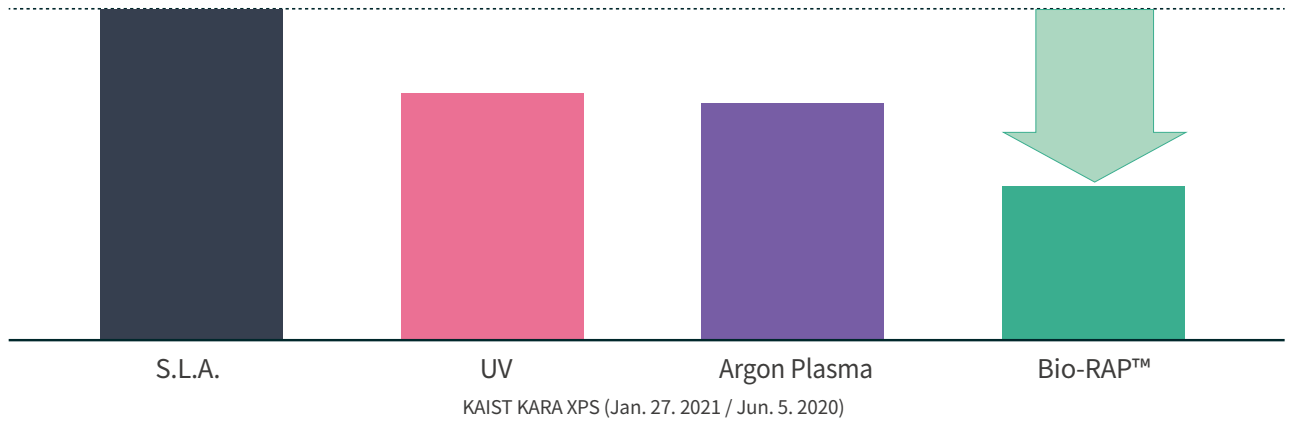
*This plasma simulation was conducted by the gas discharge plasma physics lab of KAIST.*



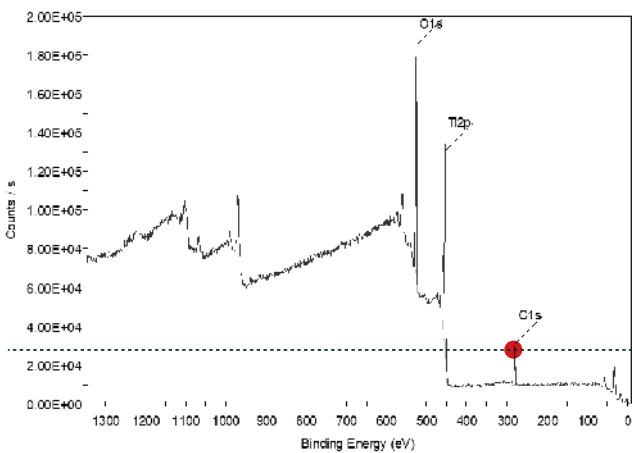
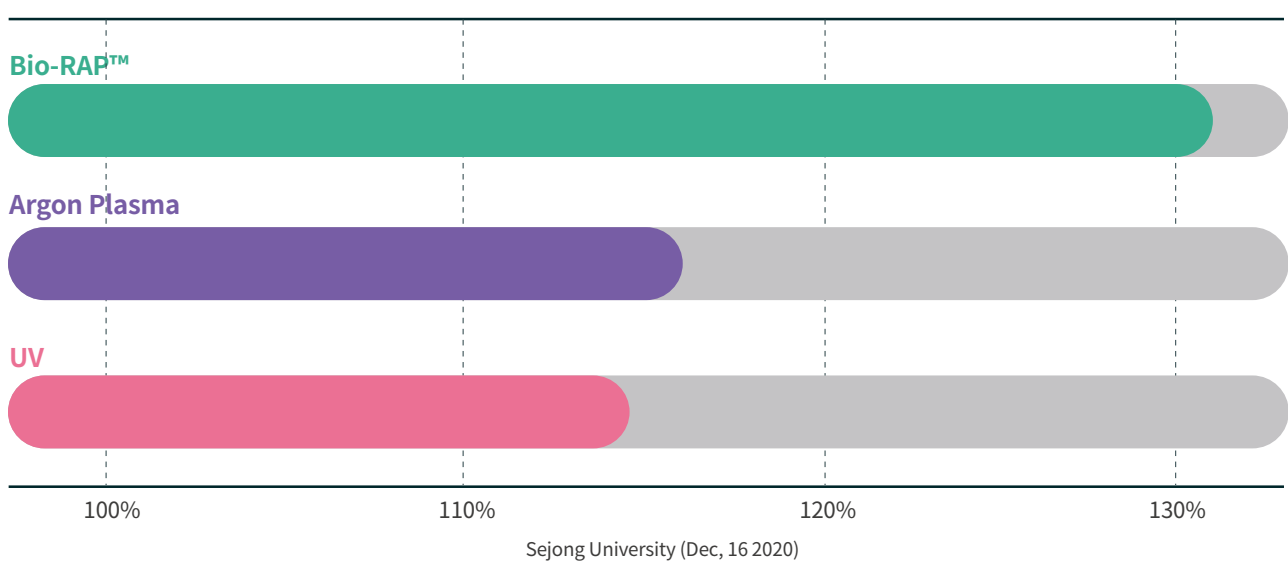


# Super Clean Bio-Compatible of Bio-RAP™

Hydrocarbon (C atom)

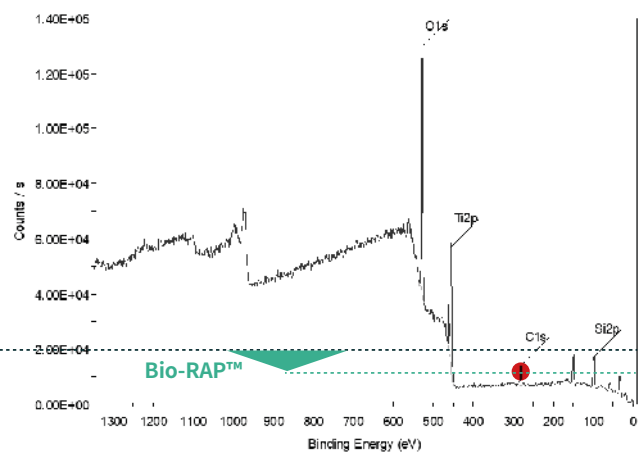


Initial Protein Attachment



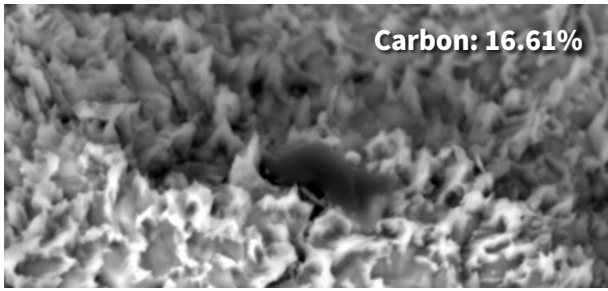
Hydrocarbon (C atom): 26.11%

KAIST KARA XPS (Jan. 27, 2021)

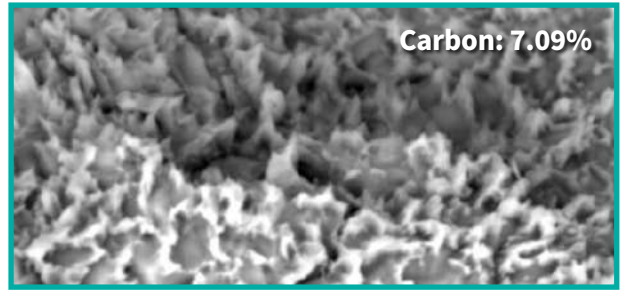


Hydrocarbon (C atom): 11.04%

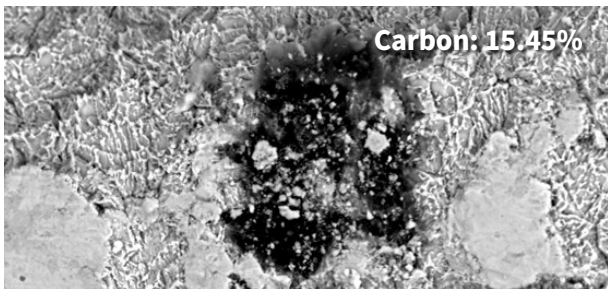
# Plasma Performance of Enhancing Osseointegration



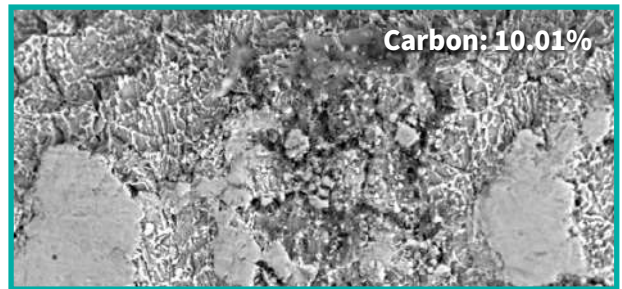
Control  
Before the Treatment



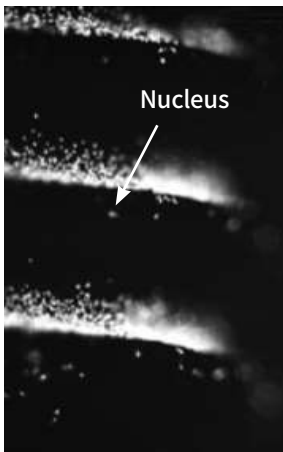
After the Treatment



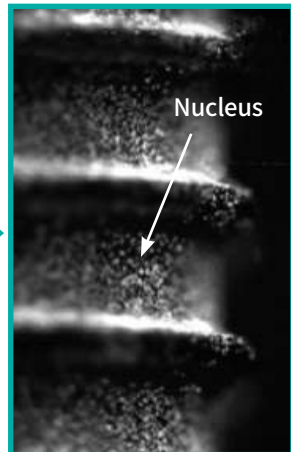
Control  
Before the Treatment



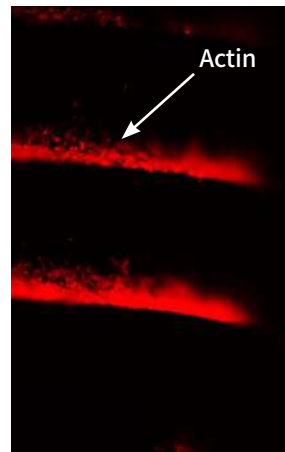
After the Treatment



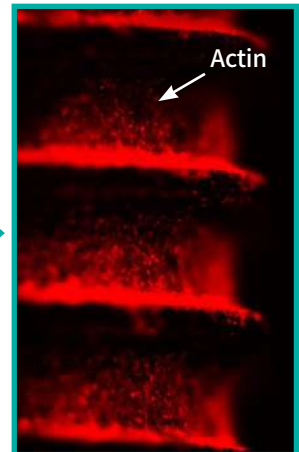
Control  
Before the Treatment



After the Treatment  
Controllable permeable  
package

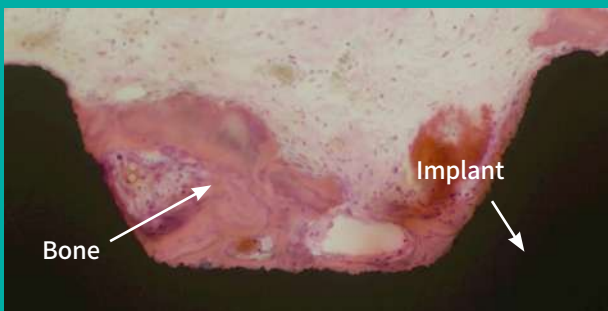


Control  
Before the Treatment

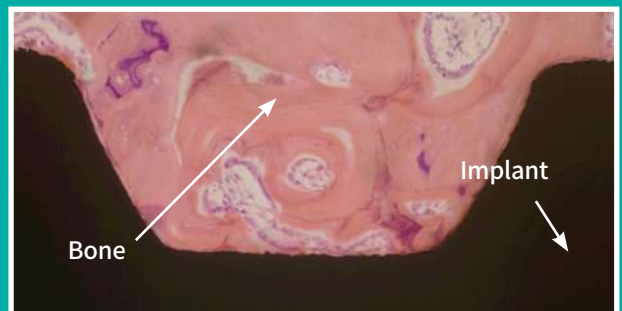


After the Treatment  
Controllable permeable  
package

## Hematoxylin and eosin (H&E) stain (In vivo test after 2 weeks implantation)



S.L.A. Surface



After the Treatment

Trusted Safeguard for all medical  
devices around the world

\*plasmapp