

# Open type Nanoporous body, surface treatment, composite

There are many examples such as stainless steel (austenitic and ferritic), nitinol, Si, C, Fe, W, Ti, Cr, Zr, Nb, Mo, Ta, Fe-Cr-Co-Ni-V high entropy alloy, Ni-Mo alloy, Fe-Al alloy, etc.! Depending on the application, magnesium and iron composites can also be made!

## Overview

Conventionally, for porous metals (Nano-microporous metals) having micropores of nano or micrometer size, a dealloying (deconditioning) method has been used to obtain porous bodies by corrosion-removing only noble metals from alloys of noble and noble metals in aqueous solution. However, there is a problem that the target metals are limited in that it is possible to fabricate nano-microporous metals only in noble metals and their alloys with respect to the standard hydrogen electrode potential.

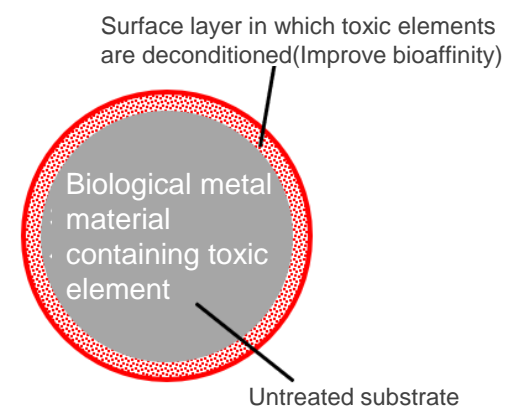
The present invention can easily fabricate nano-microporous bodies in vulgar metals and their alloys that could not be fabricated in principle by conventional methods. As one specific example, the nano-porous bodies were successfully fabricated in pure metals such as titanium, niobium, and molybdenum, alloys such as beta titanium and stainless steel (austenitic and ferritic), and carbon.

## Product Application

- Catalyst
- Medical material
- Electrode
- Sensing material
- Filter
- Composite material

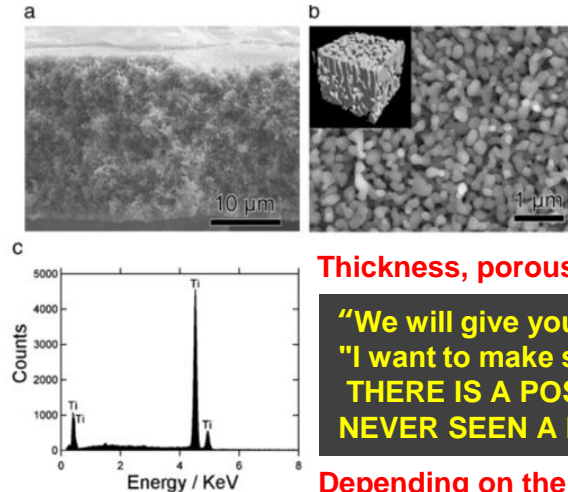
## IP Data

IP No. : US 9,279,186, JP5678353, DE112010005201.84, JP2022-140750  
 Inventor : KATO Hidemi, WADA Takeshi, other.  
 Admin No. : T10-043, T22-030



## Features • Outstandings

### Example of nanoporous titanium



**Thickness, porous diameter, controllable.**

**“We will give you various advice such as “I want to make such a porous body.”!  
 THERE IS A POSSIBILITY THAT WE’VE NEVER SEEN A POLUS BODY BEFORE!!**

**Depending on the application, a composite of magnesium and iron can be made!**

## Related Works

- [1] Materials Letters Volume 65, Issue 7, 15 April 2011, Pages 1076-1078
- [2] Materia Japan Vol. 52 No. 8 (2013) "Development of Open-Cell Porous Materials with Base and Semimetals and Their Alloys"

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