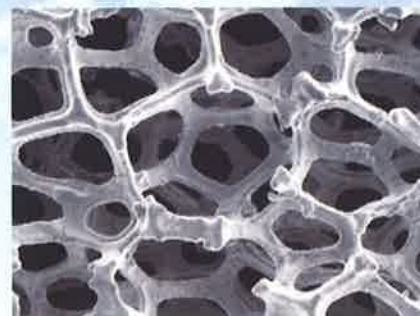


# セルメット<sup>®</sup>

## CELMET<sup>®</sup>

### 特徴 Features

- 高比表面積 Large relative surface area
- 高気孔率(最大98%) High porosity(max.98%)
- 3次元網目構造(連続通気孔)  
Three-dimensional mesh structure(continuous pores)
- 高純度 High purity
- 切断、プレスなどの加工が容易 Easy to cut and compress



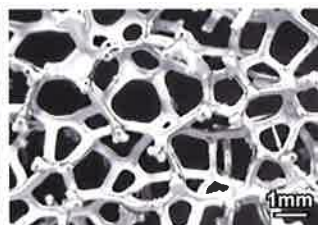
### 材質 Materials



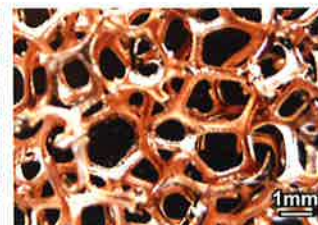
ニッケル Nickel



Ni-Cr合金 Nickel-Chromium alloy

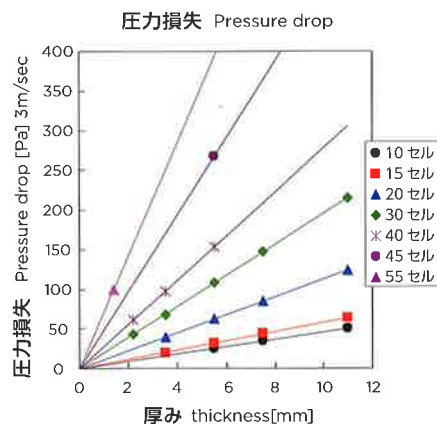
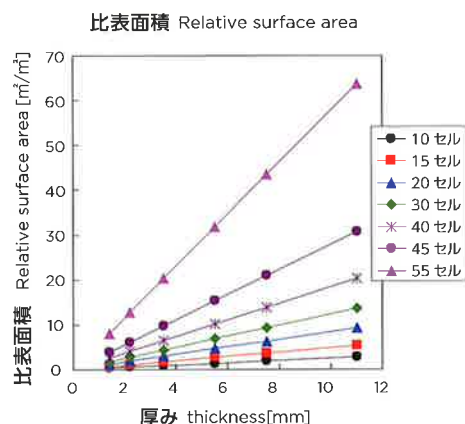


アルミニウム Aluminum



銅 Copper

### 特性 Characteristics



セル孔径、厚みによって  
比表面積や圧力損失の  
制御可能

Relative surface area and  
pressure drop are controllable  
by cell aperture diameter  
and thickness.

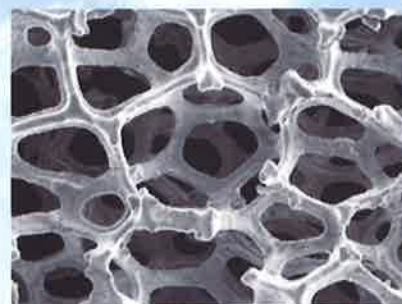
### 用途 Application

| 特徴 Features                             | 用途 Application  | 材質 Materials      |
|---|---|-------------------|
| 高熱伝導<br>High heat conductivity          | <ul style="list-style-type: none"> <li>放熱フィン Heat radiation fin</li> <li>エアコン Air conditioner</li> <li>ヒートシンク Heat sink</li> <li>電子機器 Electronics</li> </ul> 自動車 Automobile   | Al, Cu            |
| 高導電性<br>High conductivity               | <ul style="list-style-type: none"> <li>蓄電デバイス用集電体 Current collector for energy storage devices</li> <li>Ni-MH電池 Ni-MH battery(Ni)</li> <li>リチウムイオン電池 Lithium ion battery(Al, Cu)</li> <li>燃料電池 Fuel cell(Ni-Cr)</li> <li>キャパシタ capacitor(Al, Cu)</li> </ul> | Ni, Ni-Cr, Al, Cu |
| 電磁波遮蔽<br>Electromagnetic wave shielding | <ul style="list-style-type: none"> <li>電磁波シールド材 Electromagnetic wave shielding materials</li> </ul>   | Ni, Al, Cu        |
| フィルター Filter                            | <ul style="list-style-type: none"> <li>各種フィルター材 Various filters</li> </ul>  | Ni, Ni-Cr, Al, Cu |
| 触媒担持体 Catalyst carrier                  | <ul style="list-style-type: none"> <li>光触媒担持体 Photocatalyst carrier</li> <li>酸化触媒担持体 Oxidation catalyst carrier</li> </ul>  | Ni, Ni-Cr, Al, Cu |
| 軽量化 Lightweighting                      | <ul style="list-style-type: none"> <li>軽量構造材 Lightweight structural materials</li> </ul>  | Al                |

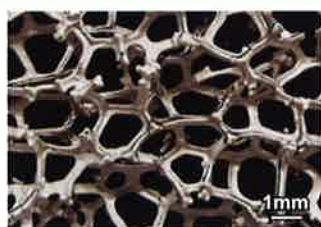
# セルメット CELMET

## 特徴 Features

- 高比表面積 Large relative surface area
- 高気孔率(最大98%) High porosity (max.98%)
- 3次元網目構造(連続通気孔)  
Three-dimensional mesh structure (continuous pores)
- 高耐食性 High corrosion resistance
- 切断、プレスなどの加工が容易  
Easy to cut and compress



## 材質 Materials



ニッケル Nickel



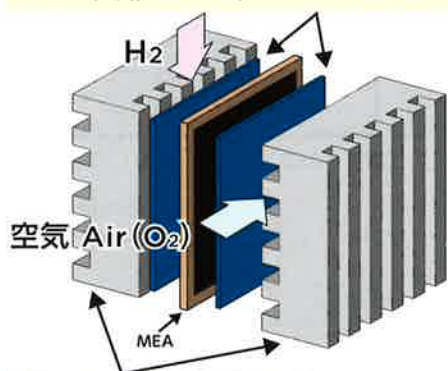
Ni-Cr合金 Nickel-Chromium alloy

## 燃料電池用途 Fuel Cell Application

従来構成  
Conventional

ガス拡散 Gas diffusion + 集電 Current collector

PEFC : カーボンペーパー Carbon paper  
SOFC : Niメッシュ Ni mesh (燃料極 Anode)  
SUSメッシュ Stainless steel mesh (空気極 Cathode)



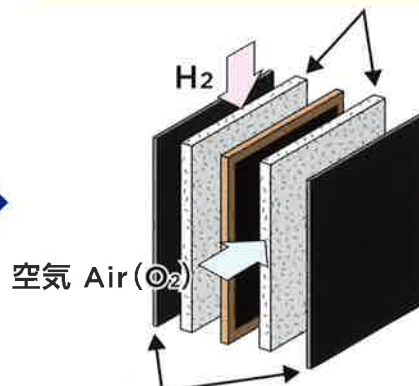
セパレータ Separator+ガス流路 Gas flow

PEFC : 溝付カーボン Carbon with ditch / 溝付チタン Titanium with ditch  
SOFC : 溝付SUS Stainless steel with ditch

新構成  
Proposal

ガス流路 Gas flow+ガス拡散 Gas diffusion+集電 Current collector

燃料極 Anode : Niセルメット Ni Celmet  
空気極 Cathode : Ni(Cr)セルメット Ni(Cr) Celmet



セパレータ Separator

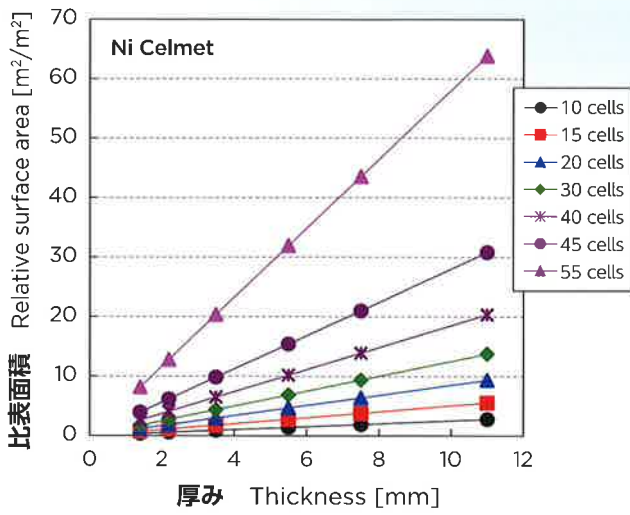
溝なしSUS Stainless flat plate

## メリット Merit

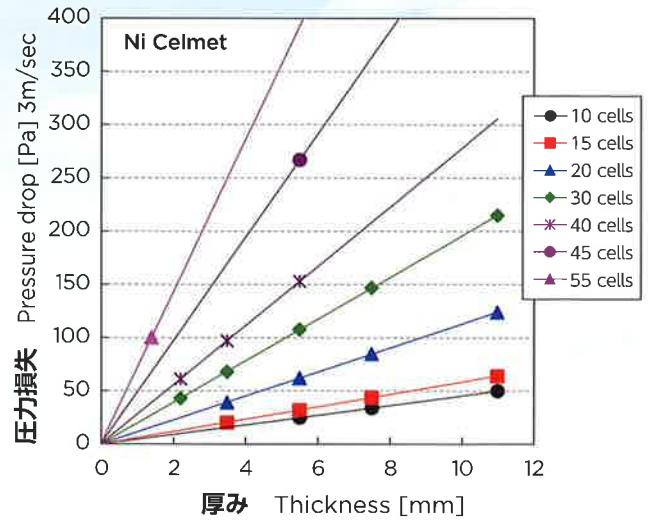
- 低コスト Low Cost : 複雑なガス流路形成が不要  
Unnecessary to form complicated gas flow channels
- コンパクト Compact : セルメットがガス流路+ガス拡散+集電を担う  
Celmet serves as gas flow, gas diffusion and current collector
- 高性能 High Performance : カーボン材(PEFC)に比べて低抵抗・高熱伝導・高強度  
Higher heat conductivity, higher strength and lower resistance than carbon materials
- 高出力 High Power : 高効率な集電可能 Current is collected with high efficiency  
MEA全体に均一なガス供給可能  
Gas is uniformly supplied within the whole MEA

# 特性 Characteristics

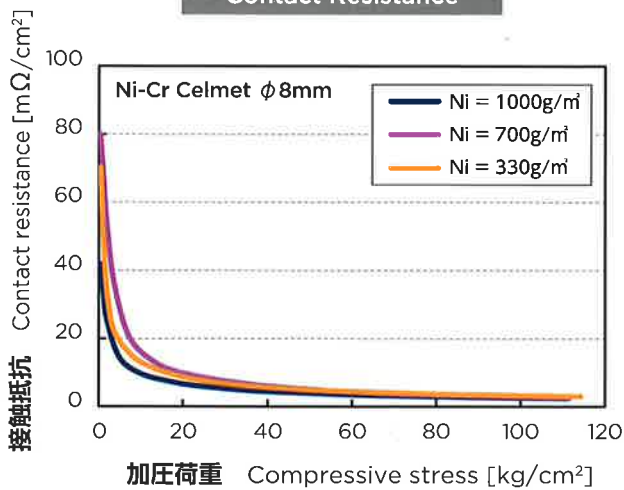
**比表面積**  
Relative Surface Area



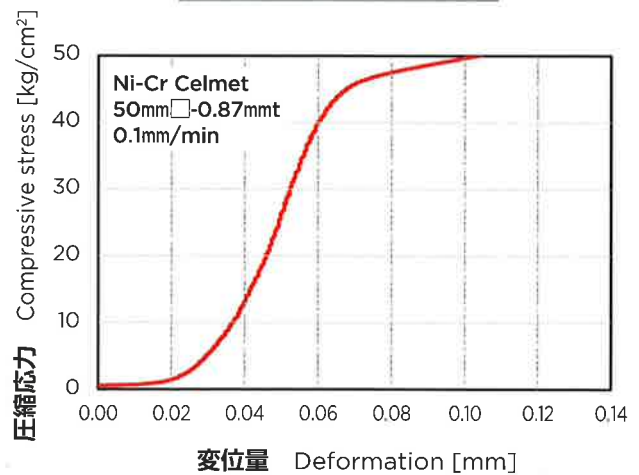
**圧力損失**  
Pressure Drop



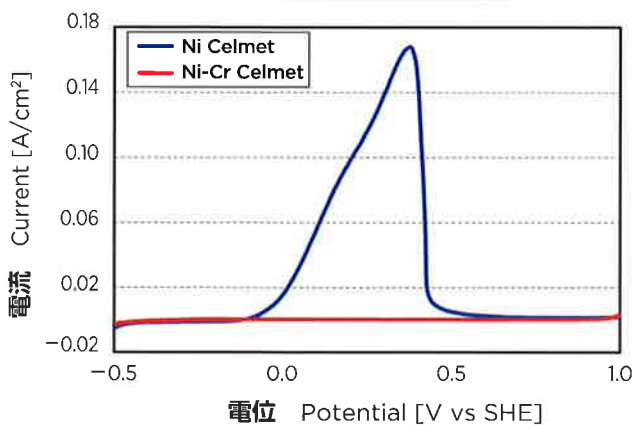
**接触抵抗**  
Contact Resistance



**圧縮強度**  
Compressive Strength



**耐食性**  
Corrosion Resistance



## Corrosion test method

### ASTM-G5-94

Test solution: sodium sulfate aq. 1mol/L  
Temperature 60°C, pH =3, H<sub>2</sub> bubbling  
LSV (Linear sweep voltammetry) 5mV/sec