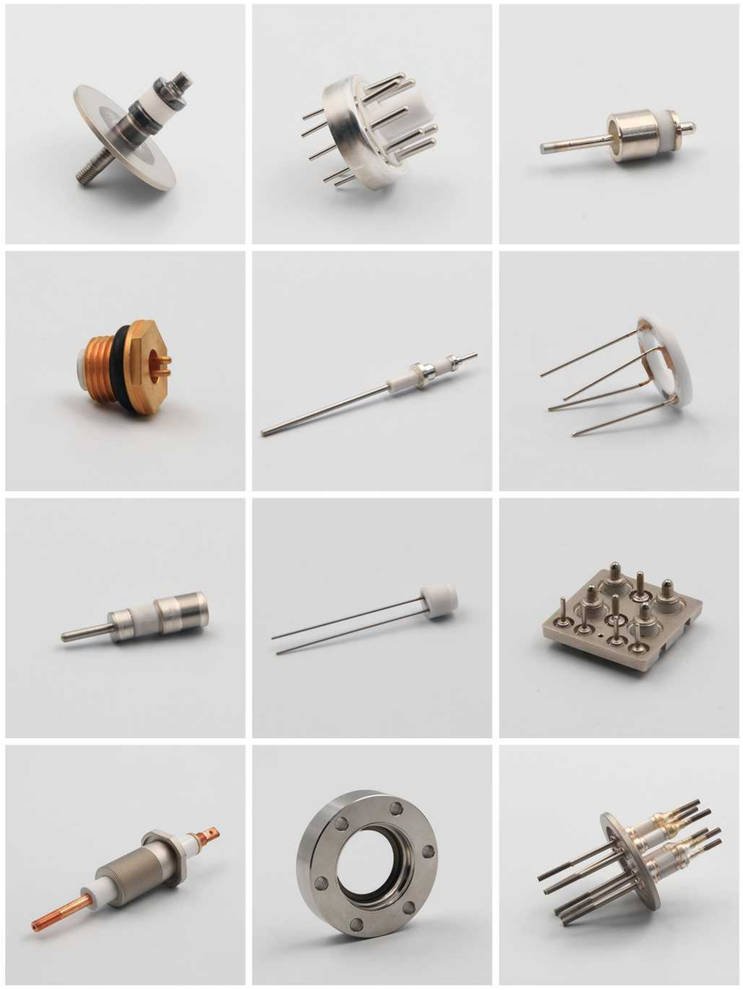
INTRODUCTION

Ceramic–to–Metal is an ideal solution for brazing ceramic to metal parts that are not able to directly bond with ceramic. Innovacera is experienced in providing technical solutions on ceramic–to–metal for engineering components.

The high–pressure laser ceramic electrode, which is the key component to connect the internal vacuum chamber with the external parts. The material requires vacuum sealing and excellent insulation. The main components are vacuum sealing flange, ceramic or glass insulator, oxygen–free copper conductive rod piece, etc., it provides reliable sealing performance and excellent insulation performance at high–pressure conditions. It's commonly used in CO_2 laser equipment.



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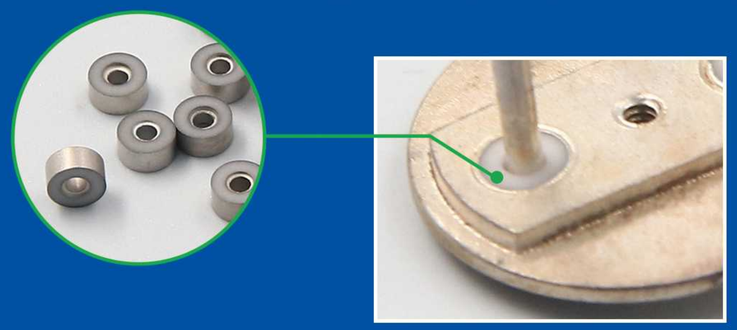
CERAMIC-TO-METAL BRAZING SOLUTIONS

XIAMEN INNOVACERA ADVANCED MATERIALS CO.,LTD.

INTRODUCTION

Innovacera supplies precision metallized ceramic components in aluminum oxide ceramics for the military, medical, and aerospace industries. Through spray, needle, and brush coatings or screen printing our capabilities allow us to metallized on flat, cylindrical, and complex ceramic bodies. Moly-Manganese is the typical base coat materials used for metallization.



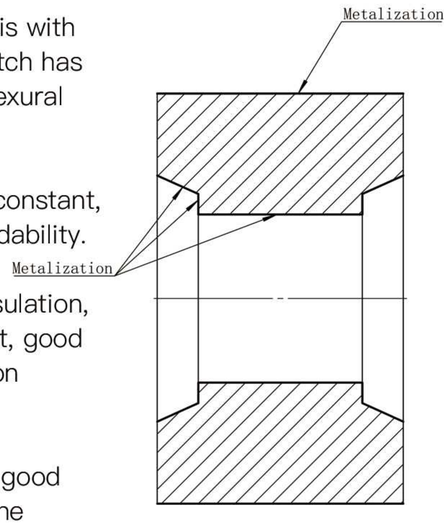
METALLIZED

Molybdenum/Manganese (Mo/Mn) metallization: 9–30um

Ni plating thickness: 3–10um

FEATURES

1. The ceramic material is with even texture, each batch has stability quality and flexural strength.
2. Metal layer is dense, constant, smooth and good weldability.
3. Excellent electrical insulation, low dielectric constant, good abrasion, and corrosion resistance.
4. High tensile strength, good airtightness to meet the requirement of the high-frequency, high-power and safe electrical components.



MATERIAL PROPERTIES

No	Item	Unit	Value
1	Purity	%	≥95
2	Volume Density	g/cm^3	≥3.6
3	Water Absorption	%	0
4	Thermal Conductivity	W/m.k (25℃)	2.4
5	Coefficient of Thermal Expansion	$(x10^{-6})$/℃ (25–1000℃)	8.2
6	Flexural Strength	MPa	340
7	Compressive Strength	MPa	2103
8	Tensile Strength	MPa	193
9	Hardness	Rockwell 45N	78
10	Withstand Voltage	K Vac/mm	8.3
11	Dielectric Constant	@1MHZ	9.1
12	Dielectric Loss Angle	@1MHZ	0.0004
13	Volume Resistivity (ohm-cm)	@25 ℃	$1x10^{-14}$
		@500 ℃	$4x10^{-9}$
		@1000 ℃	$5x10^{5}$

APPLICATIONS

- High voltage feedthrough for X-ray equipment
- High-power receptacles
- Ceramic traveling wave tubes
- Optoelectronics and power tubes
- Feedthroughs for active medical implants
- RF feedthroughs
- Electrical feedthroughs