The surface treatment technology of reinforced the adhesive strength for Polyimide films

Applied for a patent

The Features of TPS method (our original surface treatment technology under a vacuum)

- ✔It can be treated without contamination under a vacuum.
- ✔It is not a surface modification. Because the roughness of film surface is not changed.
- ✔TPS can be materialized over 10.0 [N/cm] adhesive strength between Polyimide film and Copper by sputtering layer.

The comparison data of adhesive strength with TPS treated and untreated Polyimide films by sputtering Copper.

※a method of measurement of Adhesive strength is by a peel test machine.
※The value of surface resistance before and after TPS means a change of film surface roughness.

Yellowish Polyimide film (thickness : 20 μm)		
	Adhesive strength[N/cm]※1	Surface resistance of Cu[Ω/sq]
Untreated PI+Cu	0.10	0.214
TPS treated PI+Cu	**11.55**	**0.412**

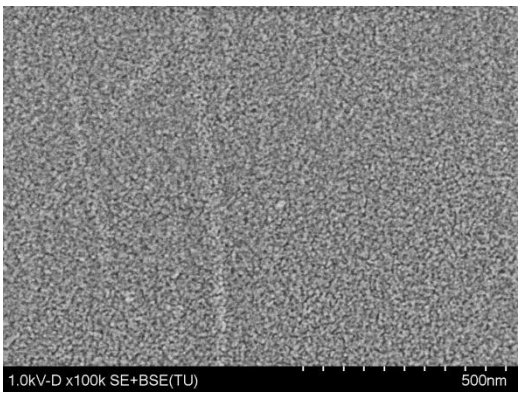
Kapton film (thickness : 30 μm)		
	Adhesive strength[N/cm]※1	Surface resistance of Cu[Ω/sq]
Untreated PI+Cu	5.45	0.397
TPS treated PI +Cu	**10.90**	**0.349**

The condition of peel test
An angle of peel=90°
F=20N Width of test piece:2mm Plating thickness:25μ m
Peel speed:0.5mm/min
(※1) Adhesive strength value is converted into 1cm width.

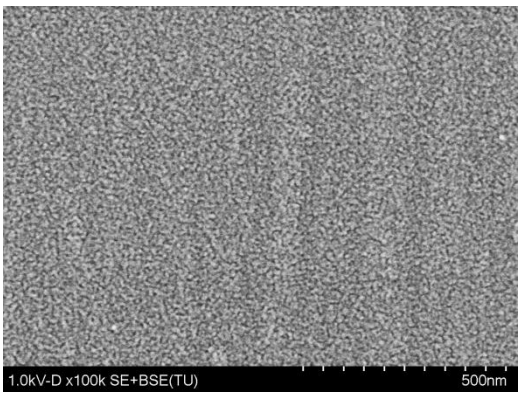
The surface resistance is measured by 4 –terminal method.

(※2) Yellowish polyimide film and Kapton film are supplied by different manufacturer.

SEM graph of TPS treated polyimide film surface



SEM graph of no treated polyimide film surface



Notes : All above values are the measurement values and they are not guaranteed performance.

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