TANAKA

Introduction of precious metal alloy for Probe-pins materials and mechanical properties of Cu-Ag alloy that product name called TK-101.

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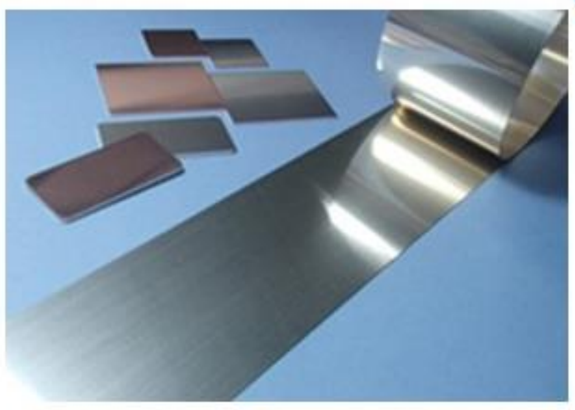
About TANAKA Precious Metals.

1885
Started Money Exchange business as "Tanaka Shoten" in Tokyo

2022
680 Billion JPY
Net sales (consolidated)
5,355
Employees (consolidated)

Electrical contact materials

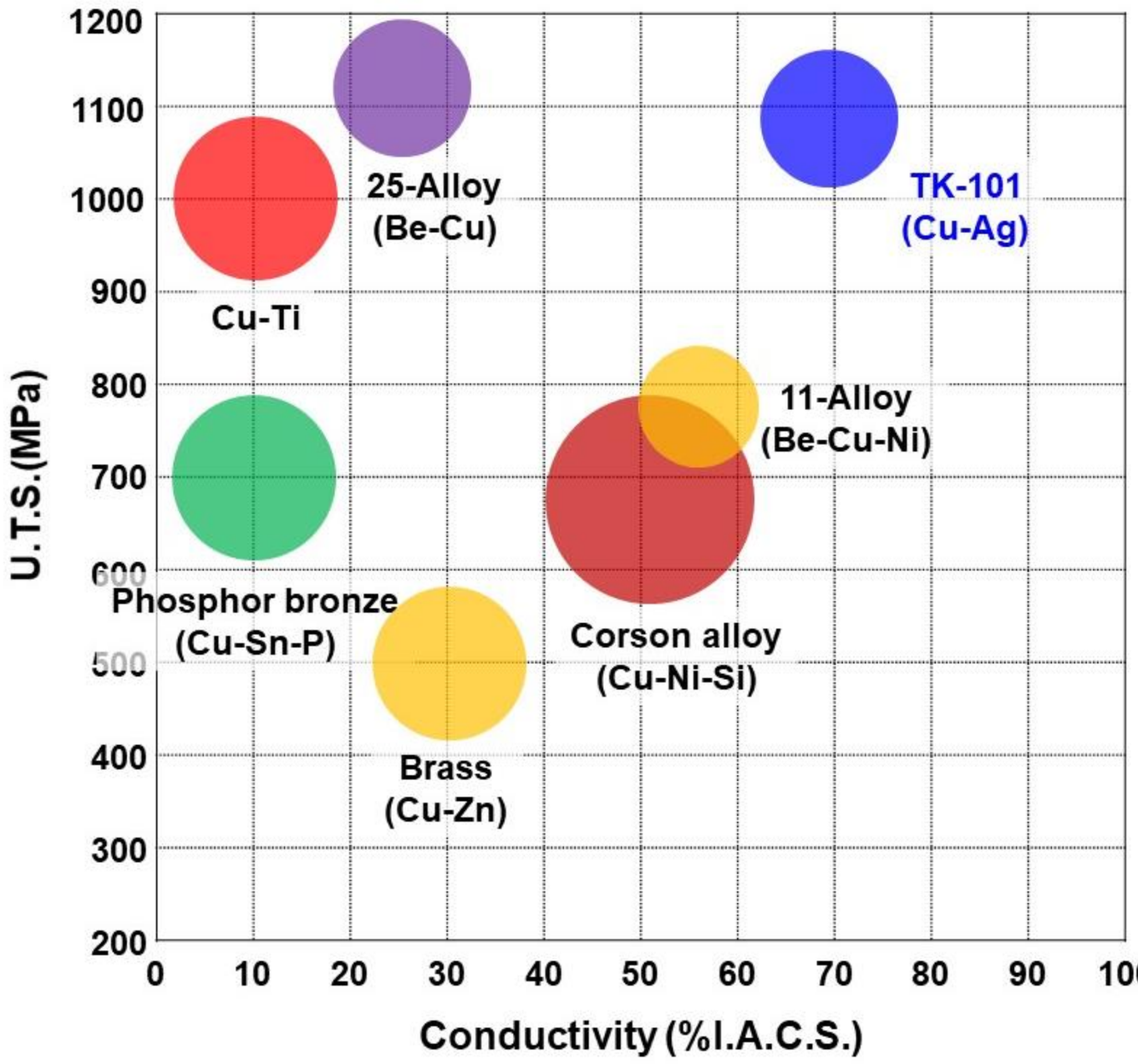


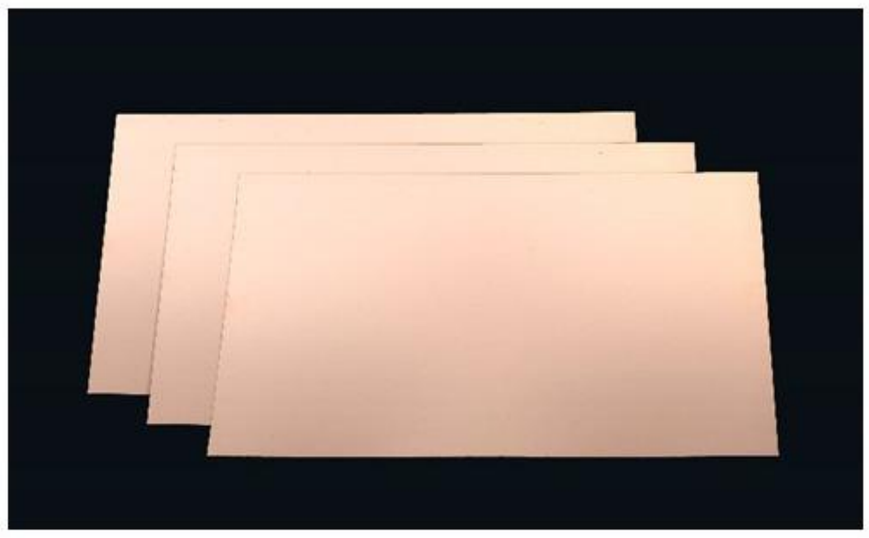
Bonding materials

Sputtering target

Introduction / Probe material requirements for copper alloys

High Electrical Conductivity | High Ductility | High Hardness (Long life) | High Strength (Long life)

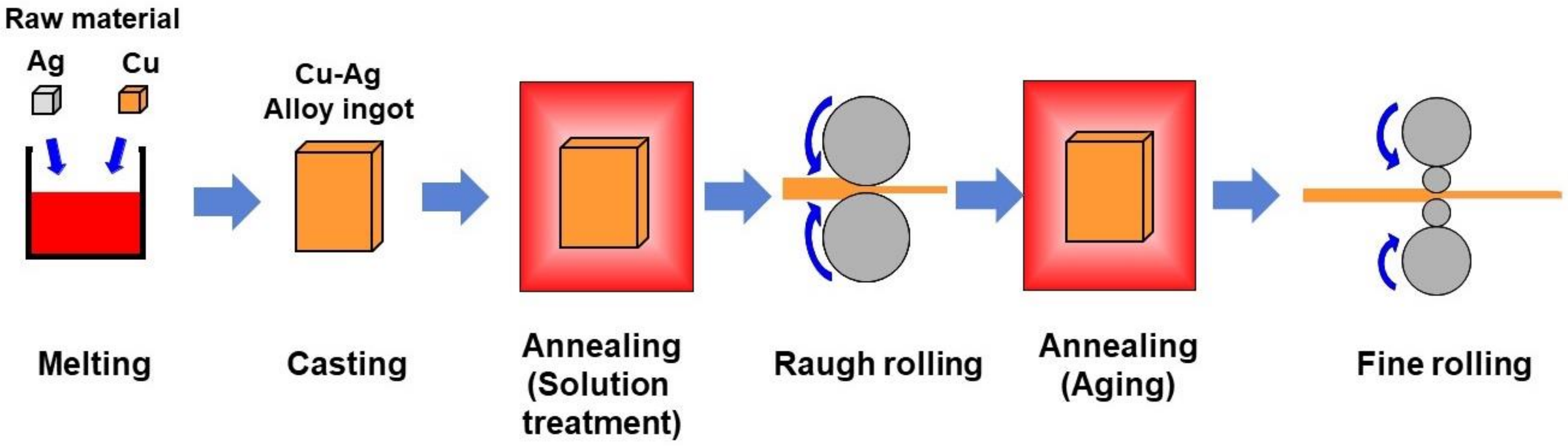




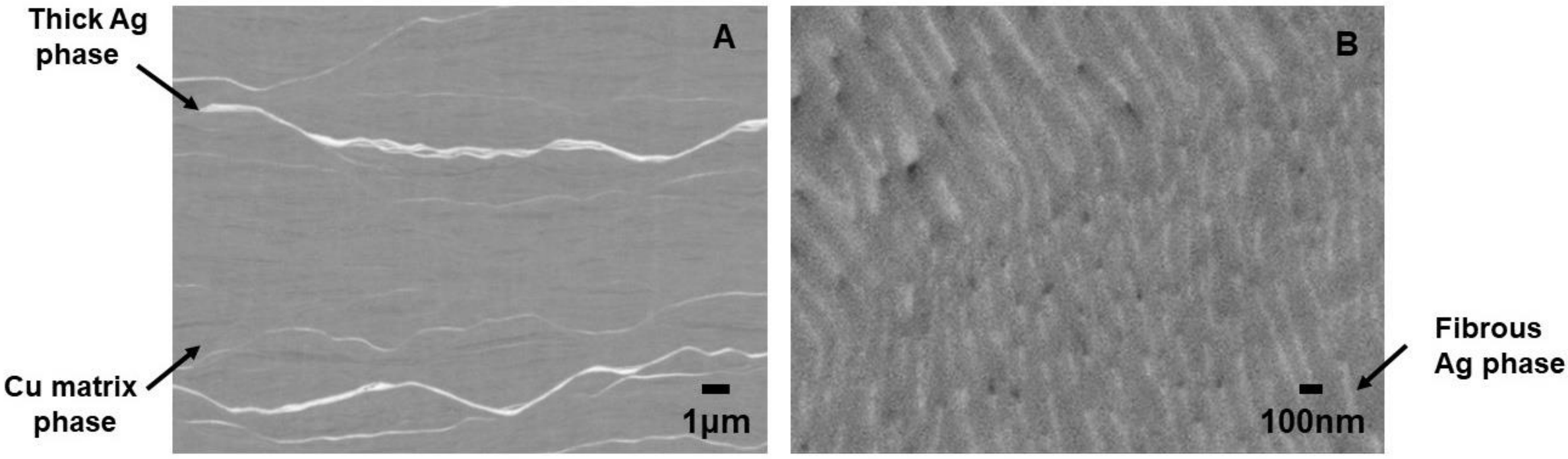
Appearance of TK-101 sheet.

Graph-1. Relation between conductivity and tensile strength on Cu alloy matrix.

Material process flow

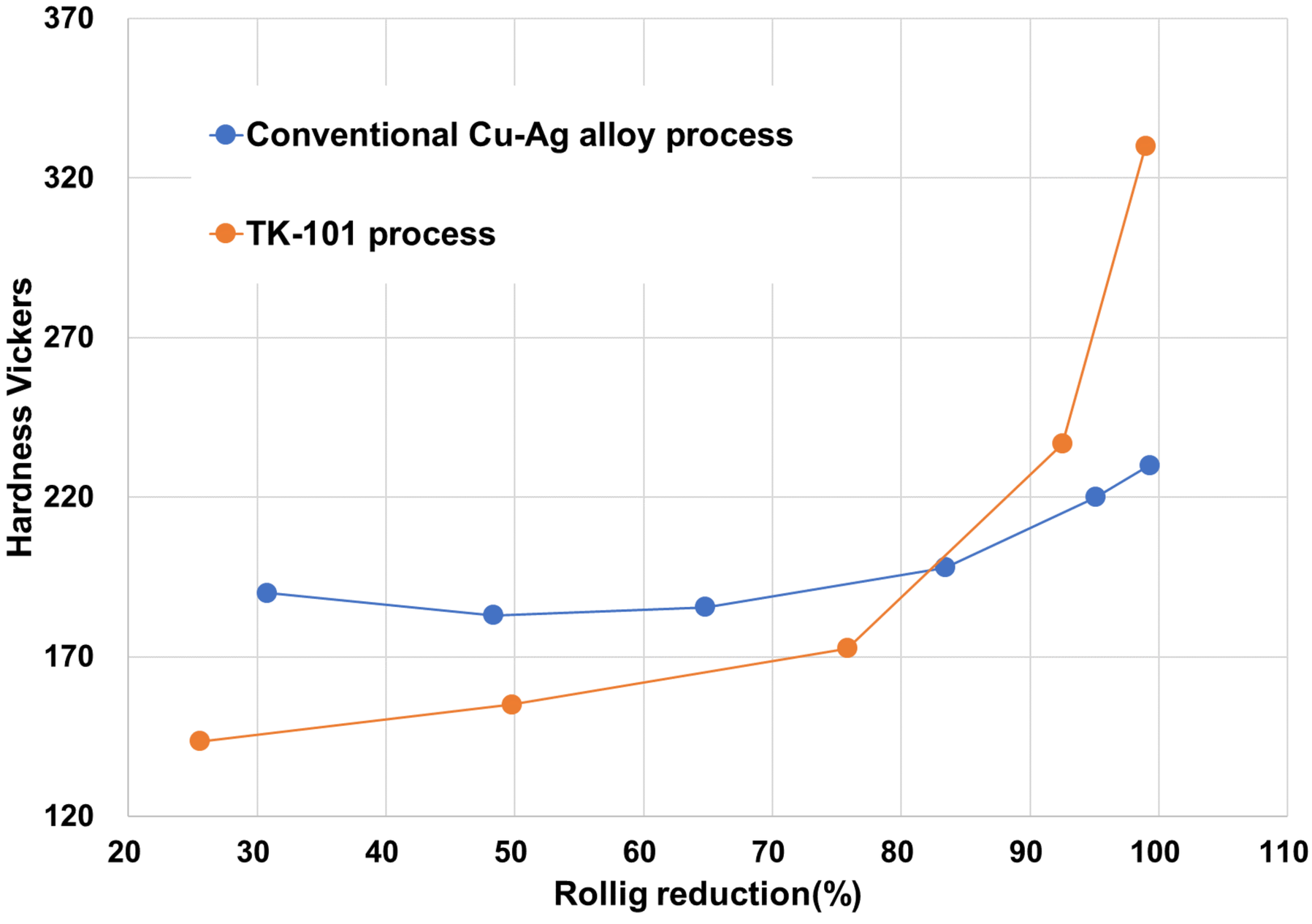


Features-1. Microstructure



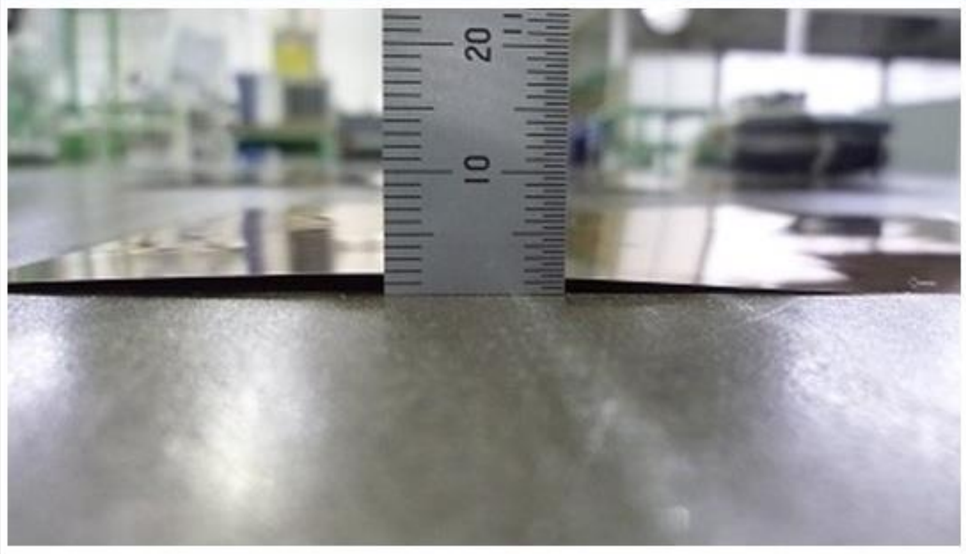
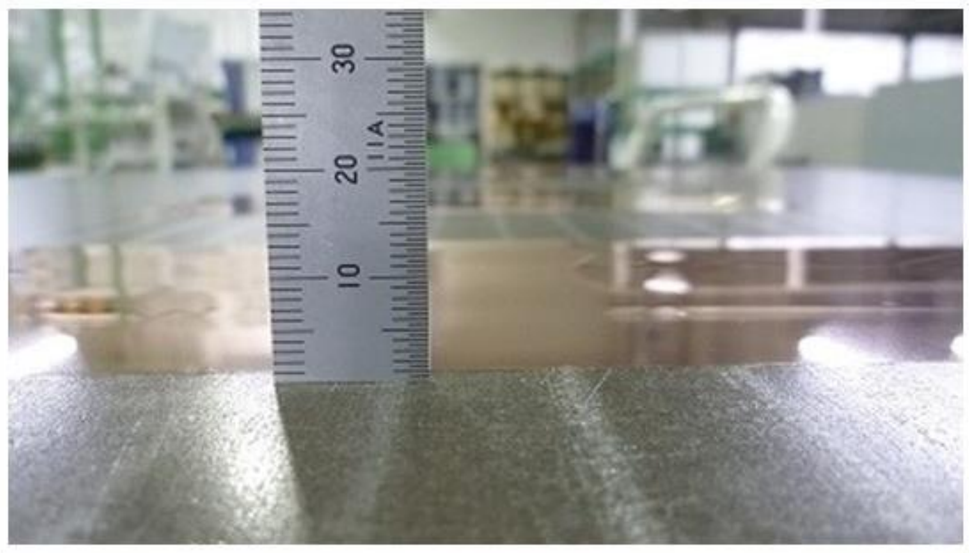
SEM image. Microstructure of As-rolled TK-101. (A: Overall image B: Enlarged image of matrix phase)

Features-2. Mechanical properties



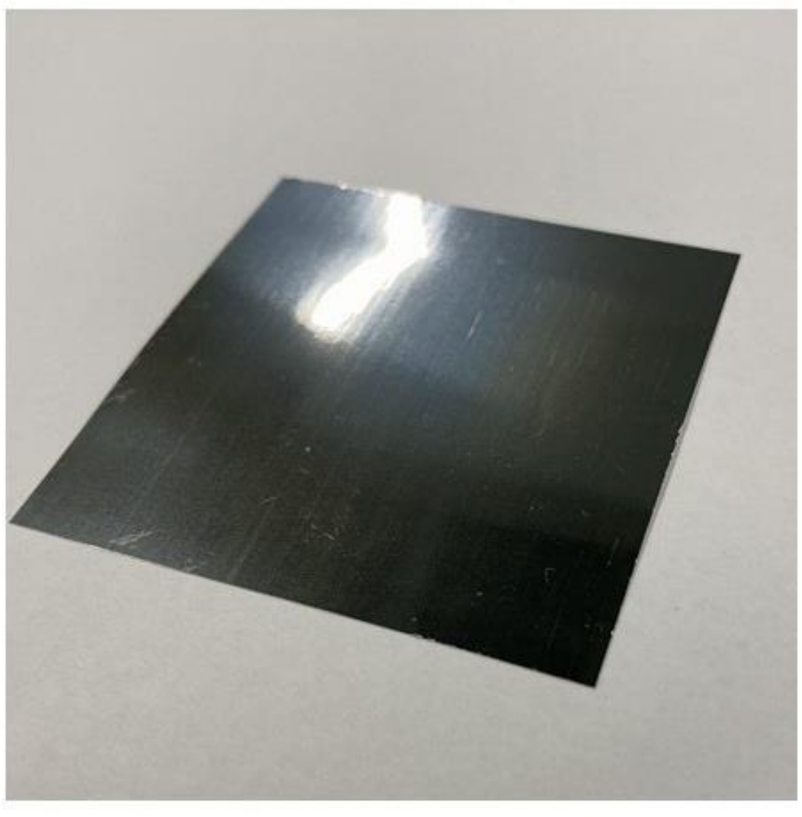
Graph-2. Relation between rolling reduction and hardness.

Recent challenges / Request for flatness

	Conventional material	Improved material
Appearance		
Flatness (mm/Length)	2～3	0.1～0.2
U.T.S. (MPa)	1,100	750
Conductivity (%I.A.C.S)	65	70

Topics / Sheet of TK-FS (Pd-based alloy)

Picture-1. TK-FS wire reported in 2023.



Picture-2. Newly developed TK-FS sheet.

Conclusion

- TK-101 is a material that has both high conductivity and strength.
- The properties are improved by fibrous Ag phases of different sizes.
- The properties of TK-101 is significantly affected by processing work hardening.
- Improvement of flatness causes the problem of reduction in strength.
  The next challenge of the development is to achieve both flatness and strength.

Contact information

https://www.tanaka.co.jp/support/req/