

# Guide for Test Marketing Release of Carbon Nanotube (CNT) SPM Probes

UNISOKU has successfully grown CNT on nickel probes and cantilevers by CVD.

This has allowed us to maintain conductivity\*1 and reduce the separation at the CNT–probe interface.



Japan Science and Technology Agency

These products were jointly developed by Toyota Technological Institute, The University of Tokyo and Osaka University in the Development of Systems and Technology for Advanced Measurement and Analysis project.

## CNT Probe Line-up

Nickel STM Probe with CNT	Nickel Contact Probe with CNT	AFM Cantilever with CNT
<p>Tip shape: Cone shape Diameter: 0.25 mm Material: Polycrystalline Ni</p> <p>Overall Length 10 mm</p>	<p>Tip shape: Cone shape Diameter: 0.25 mm Material: Polycrystalline Ni</p> <p>Overall Length 10 mm</p>	<p>Cantilever Body Budget Sensors Co. Tap 300 Al-G</p>
<p>SEM Image of Tip</p>	<p>SEM Image of Tip</p>	<p>SEM Image of Tip</p>
<p><b>Specification</b></p> <p>Multiple structurally and chemically stable carbon nanotubes are grown on a Ni probe.</p>	<p><b>Specification</b></p> <p>Probes with a single carbon nanotube at the tip are selected from Ni probes on which CNT have been grown.</p>	<p><b>Specification</b></p> <p>CNT are grown on an over-the-counter Si cantilever.</p>
<p><b>Characteristics</b></p> <p>Allows reliable STM measurements to be carried out.</p>	<p><b>Characteristics</b></p> <p>High aspect ratio and rigidity, enabling nano-order probing.</p>	<p><b>Characteristics</b></p> <p>High resolution and durability. Because magnetic metals are included, it can also be used for MFM.*2</p>

This product is currently in the trial marketing phase to evaluate performance and yield.

Limit sales only to cooperating users. Anticipated features are not yet guaranteed for this product.

\*1: STM-level conductivity has been confirmed, but metal thin film-coated products can be produced for contact probes.

\*2: Development and evaluation results by Toyota Technological Institute's Yoshimura Research Laboratory.