



September 20, 2016
Tohoku University
Ball Wave Inc.

Press Release

Ball Wave Inc., a startup venture based on Tohoku University research, is officially launched with funding from public and private investors

Research and development efforts focusing on the ball surface acoustic wave (SAW) sensor—a revolutionary new sensor developed by Professor Kazushi Yamanaka and collaborators at Tohoku University’s New Industry Creation Hatchery Center—have begun in earnest with support from the Program for Creating STart-ups from Advanced Research and Technology (START Program) initiative of Japan’s Ministry of Education, Culture, Sports, Science and Technology (MEXT). [The topic selected in fiscal year 2014 was “Using ball-SAW sensors to commercialize small, high-speed, high-sensitivity trace-moisture analyzer¹ units,” with project promoter Tsukuba Technology Seed Co., Ltd. (now Japan Strategic Capital Co., Ltd.). Since fiscal year 2015, the START program has been operated by the Japan Science and Technology Agency.]

Now, Ball Wave Inc., a company founded on the fruits of this research, announces its official launch, with funding from public and private investors.

The international roadmap of the semiconductor industry, following rapidly-moving trends in device miniaturization and high-density integration, requires that the residual water content of material gases used in manufacturing processes have dew points² of -100°C or below. However, the only existing trace-moisture analyzers with the sensitivity to detect such small quantities of water are optical instruments, which are large and expensive, prohibiting their installation on manufacturing lines. This has created strong demand for small, high-sensitivity micro-moisture analyzers.

Ball-SAW sensors are high-speed, high-sensitivity gas sensors that exploit a phenomenon that seems to defy the laws of physics: long-distance propagation of SAWs on a spherical object. Trace-moisture analyzers employing these sensors are capable of detecting moisture content at a dew point of -100°C and are small enough (3 mm in diameter) to be installed on manufacturing lines. Ball Wave Inc. will meet the needs of the semiconductor and gas manufacturing industries by developing these unique sensors as commercial products. The company also expects these



products to be of use in preventing damage to instruments caused by dew condensation in the natural-gas liquefaction process. Ball Wave Inc. also plans market launches for hydrogen gas sensors and palm-sized portable gas chromatographs developed with support from MEXT's Special Coordination Funds for the Promotion of Science and Technology and JST's Strategic Basic Research Programs (CREST), helping to usher in the hydrogen-based society of the future and contribute to environmental safety and protection.

Ball Wave Inc.'s business plans and future promise have been assessed favorably, and to date the company has raised a total of 230 million yen from several investors, including Tohoku University Venture Partners Co., Ltd.—established under the Public/Private Innovation Program created by the “Emergency Economic Measures for the Revitalization of the Japanese Economy” initiative approved by the Japanese Cabinet on January 11, 2013—as well as from Daiwa Corporate Investment Co., Ltd., 77 Capital, and SMBC Venture Capital.

Ball Wave's first product shipments are targeted for the first period of fiscal year 2017. With annual sales projections of roughly 1 billion yen for fiscal year 2019, the company expects to be profitable within a single fiscal year.

Glossary of terms

1. A *trace-moisture analyzer* is an instrument capable of measuring the moisture content in gas samples at concentrations of approximately 1 ppm (1 part per million) or below.
2. The *dew point* is the temperature at which a moisture-containing gas, cooled at atmospheric pressure, first exhibits dew condensation. The dew point of a gas decreases as the gas dries. A dew point of -100°C corresponds to a moisture content of 14 ppb (14 parts per billion).

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