

## *New Products*

### *Contribution to Commercialization of the 1.2 GHz NMR Magnet*

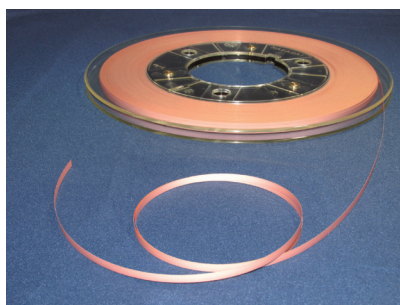
Nuclear Magnetic Resonance (NMR) is a practical technology widely used in structural analysis of chemicals, quality control, material science, and structural biology, which is also utilized in researches of the Covid-19 as well as disease and drug development. Bruker Corporation, a business partner of Fujikura Ltd., is a leading company of NMR in the world, who have pioneered the development of the Ultra High Field (UHF) NMR and exploited its market. It is expected that the UHF NMR will further develop researches using NMR.

Superconducting magnets made of Low-Temperature Superconductors (LTS) of the Niobium-Titanium (NbTi) and Niobium-Tin (Nb<sub>3</sub>Sn) are used in a typical NMR, where a high-resolution NMR with 23.5 T (which corresponds to a <sup>1</sup>H resonance frequency of 1.0 GHz) has been the most high-end. Using the Rare-Earth-based High-Temperature Superconductor manufactured by Fujikura, Bruker has successfully developed the 1.2 GHz (which corresponds to a magnetic field of 28.2 T) NMR magnet which could not be achievable by conventional LTS materials. The magnetic field of 28.2 T corresponds to <sup>1</sup>H resonance frequency of 1.2 GHz in NMR, which is the world record in the current high-resolution NMR.

The Rare-Earth-based High-Temperature Superconductor is superior in an in-field superconducting performance. Fujikura has upgraded its own manufacturing technologies and achieved stable production of high-performance and high-quality superconductor. These constant efforts have been highly regarded by Bruker and Fujikura has contributed to commercialization of the high-resolution 1.2 GHz NMR. Fujikura will supply high-quality and reliable superconductors stably and contribute to the realization of a sustainable society in the coming future through industrial superconducting applications including much more high-resolution NMR.



**Fig.1. Bruker's high-end 1.2GHz NMR magnet**



**Fig.2. Fujikura's Rare-Earth-based High-Temperature Superconductor**

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