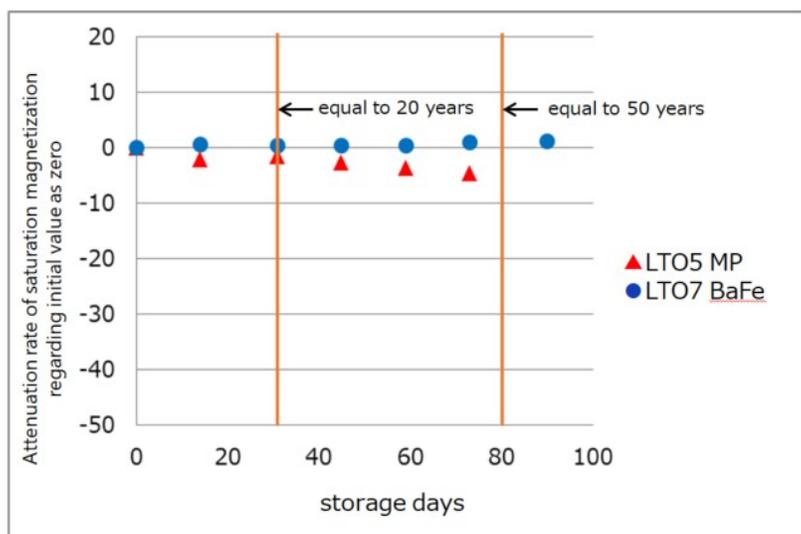


In 2013, we verified the lifetime of LTO5 made of metal particle (MP) is more than 20 years. 5 years have passed since the last evaluation test, we evaluated newly the lifetime of tape medium by using LTO7 made of Barium Ferrite particle (BaFe), which is the mainstream in the market. As a result, we have found the lifetime of BaFe in terms of magnetic properties is over 50 years.

Summary

In LTO archival storage environment (25 ° C), the lifetime of LTO5 MP that was verified last time was 20 years at least. For this time, we verified that the magnetic properties of LTO7 BaFe in the same environment is more than 50 years. To evaluate lifetime, we engage 2 examination, a test for stability of saturation magnetization over time and a test for decay rate of recorded signal.

Stability of saturation magnetization over time



We used Arrhenius Formula to estimate the accelerated lifetime of LTO5 MP, and compared it with LTO7 BaFe on the assumption that activation energy of LTO-7 BaFe is the same as LTO-5 MP.

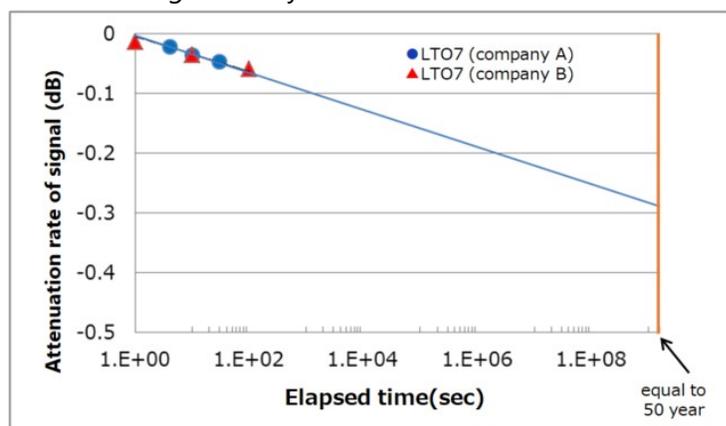
The left figure compares the stability over time of saturation magnetization of LTO5 MP and LTO7 BaFe in the storage test conducted under dry conditions of 70 ° C. Roughly to say, saturation magnetization shows the strength of magnetic power. LTO7 BaFe has a very small decay rate, and even in the point of 50 years, it was smaller than the decay rate of LTO5 MP at the point of 20 years.

Stability of decay rate of recorded signal

Following an index of thermal stability of a magnetic particle, KuV / kBT , it is possible to measure a change in strength of magnetic signal in a short time and to estimate that after a long time. While using this index, we evaluated the stability of BaFe by measuring the time dependence of signal decay.

The graph on the right shows the signal decay of LTO7 BaFe is about 0.03 dB / decade. This means the signal attenuates by about 0.03 dB if the elapsed time advances 10 times, and the decay rate after 50 years becomes 0.3 dB.

Another research says that the error rate remains almost unchanged even if the signal is attenuated by 0.5 dB. Therefore, the signal reading quality of LTO7 BaFe can be estimated to be no problem for more than 50 years.



*This test has confirmed the life of more than 50 years in terms of magnetic properties. In practice, we recommend that you migrate to a new recording system as appropriate, taking into account the influence of factors such as the operation and external environment, and the support period of the compatible system.

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