

Conditional Control of Boron Nitride Using Growth Conditions in Chemical Vapor Deposition and Synthesis of Amorphous BN

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In this paper, a large-scale array resistance memristor device was fabricated in which the crystallinity of the thin film was controlled by controlling the growth conditions of BN [1].

MIM (Metal/Insulator/Metal) It is a two-terminal resistance switching device with a vertical structure and is composed of Au/Amourphous/Au [2]. As a result of analyzing changes in the state, thickness, and crystal structure of the film by controlling various growth conditions, it can be seen that it has boron nitride properties through Raman spectroscopy and TEM images. When a voltage is applied to a non-conductive material in RRAM, filaments are created and ions are aggregated so that an electric current can flow. By controlling the growth conditions, RRAM with high electrical properties was realized.

References

- [1] Nail, C., et al. "Understanding RRAM endurance, retention and window margin trade-off using experimental results and simulations." *2016 IEEE International Electron Devices Meeting (IEDM)*. IEEE, 2016.
- [2] Li, YingTao, et al. "An overview of resistive random access memory devices." *Chinese Science Bulletin* 56.28 (2011): 3072-3078.

Figures

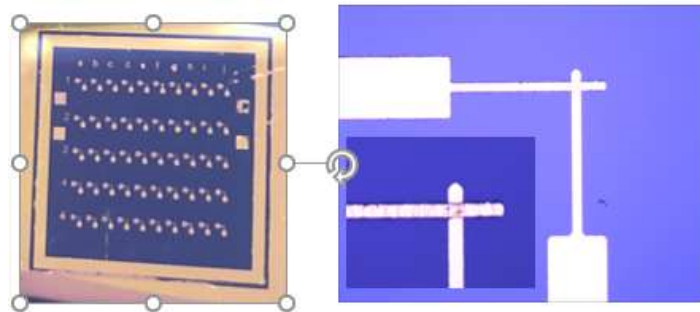


Figure 1: OM image of RRAM device made with MIM structure

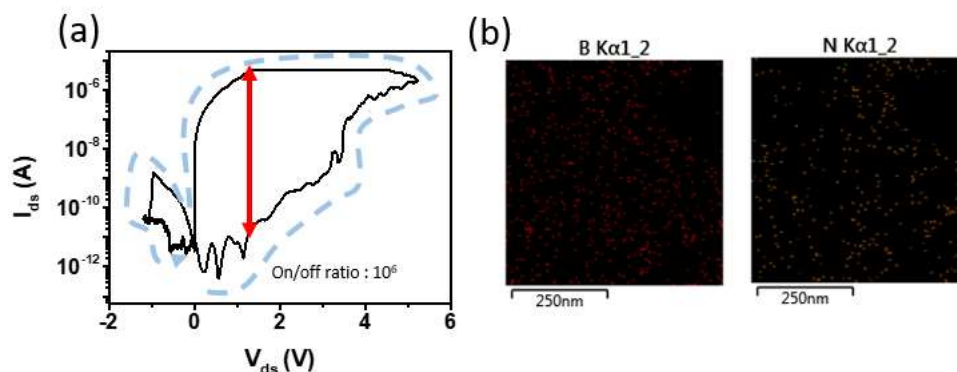


Figure 2: (a) I-V curve of RRAM device, (b) EDS measurement of RRAM device of B and N