

BiFeO₃ films on steel substrate prepared by the polymerized complex method

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ABSTRACT

We deposited BiFeO₃ films on stainless steel substrates using a simple low-temperature wet-chemical route. We used bismuth and iron nitrates as metal source and two chelating agents, citric acid and polyvinyl alcohol, in water to prepare a solution and deposited the film by dipping the steel substrate in the viscous solution.

We have investigated the structure of the BiFeO₃ film on steel by HRSEM, TEM, HRTEM, EDS and EELS. The film deposited on the steel substrate has two sublayers: a very thin (about 100 nm) nanocrystalline layer, with crystallite size of few nms, and a thicker (about 1 micron) crystalline layer.

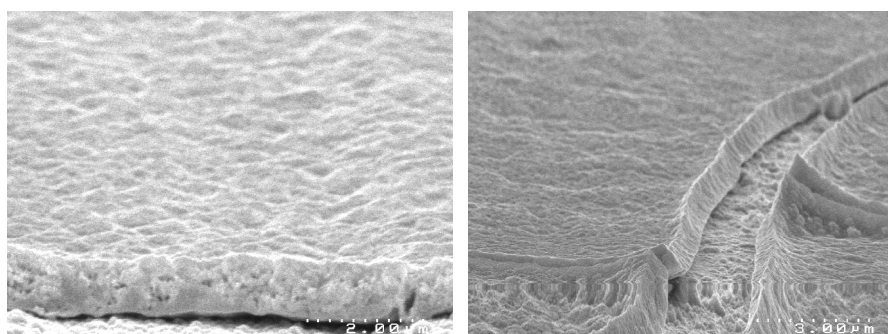


Fig. 1. SEM images of the BiFeO₃ film on steel substrate

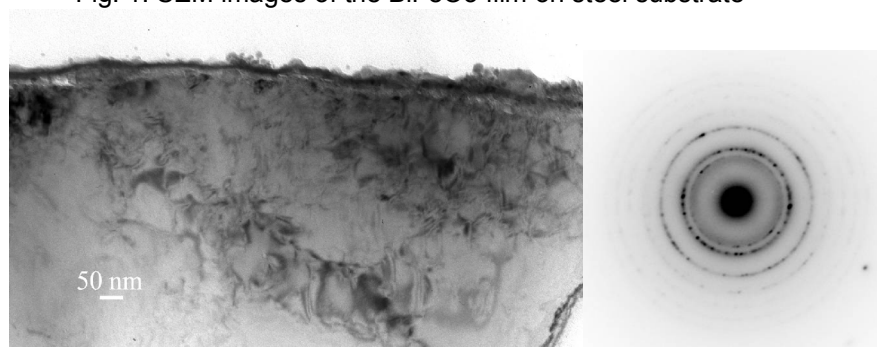


Fig. 2. TEM and ED images of the BiFeO₃ film

REFERENCES

- [1] V. Fruth, M. Popa, J. M. Calderon, E. M. Anghel, D. Berger, M. Gartner, M. Anastasescu, P. Oiceanu, M. Zaharescu, "BiFeO₃ films; structures and properties", *J. Eur. Ceram. Soc.*, in press (2007).