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FABRICATION OF Bi-Ti-O THIN FILM PRESSURE SENSOR PREPARED BY ELECTRON BEAM EVAPORATION METHOD

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ABSTRACT

Polycrystalline Bi-Ti-O thin film was prepared by multilayer deposition method using electron beam evaporation. The thin film was obtained by sequentially evaporating Bi_2O_3 / TiO_2 layers on Si / SiO_2 / Ti / Pt substrate followed by annealing for 30 minutes in air at 850 ^{O}C. A pressure sensor was fabricated by depositing Al film electrode on the top of the annealed multilayer films. The piezoelectric response of the sensor was then measured by pneumatic loading method. It was found that the sensor was sensitive to the applied pressure and showed good repeatability. This study showed the potentiality to obtain Bi-Ti-O thin film pressure sensor by electron beam multilayer deposition.

REFERENCES

[1] D. Tandeske 1984, *Pressure sensors: selection and application*, 73-75, 271-277.
[2] A. Megriche, L. Lebrun and M. Troccaz 1999, *Sensors and Actuators A.* **78**, 88-91.
[3] Y. Xu 1991, *Ferroelectric materials and their application*, 121-143.
[4] R. Muhammet, T. Nakamura, M. Shimizu and T. Shiosaki 1994, *Japanese Journal of Applied Physics.* **33**, Part 1, No. 9B, 5215-5218.
[5] M. Yamaguchi and T. Nagatomo 1999, *Thin Solid Films*. **348**, 294-298.
[6] K.K. Jong, K. S. Tae, S. K. Sang and K. Jinheung 2002, *Materials Letters.* **57**, 964–968.
[7] W. Wu, K. Fumoto, Y. Oishi, M. Okuyama and Y. Hamakawa 1995, *Japanese Journal of Applied Physics.* **34**, Part 1, No. 9B, 5141-5145.
[8] C.W. Chong, M. Yahaya and M.M. Salleh 2003, *Proceedings of IEEE National Symposium on Microelectronics, Perlis, Malaysia.* 48-51.
[9] T.L. Jordan and Z. Ounaies 2001, *ICASE, NASA Langley Research Center, Hampton,Virginia*.
[10] M. Takahashi, Y. Noguchi and M. Miyayama 2002, *Jpn. J. Appl. Phys.* **41**, Part 1, No 11B, 7053-7056.