

Multiferroic MEMS device fabrication using pulsed laser deposited Dy modified BiFeO₃ thin films

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The importance of pulsed laser deposition technique in achieving insulating, single phase multiferroic thin films of Dy modified BiFeO₃ (BDFO) system will be discussed. It will be shown that these pulsed laser deposited films not only exhibit multiferroic behavior at room temperature but also exhibit presence of significant coupling between ferroelectric and ferromagnetic order parameters. More importantly the talk will cover the fabrication process for Si compatible MEMS device structure (cantilever) using modified BiFeO₃ multiferroic thin films (Fig. 1a & 1b). The actuation of these cantilevers brought by means of applied electric as well as magnetic field will be demonstrated (Fig. 2a & 2b)¹.

Process steps involved in fabrication of BDFO cantilever

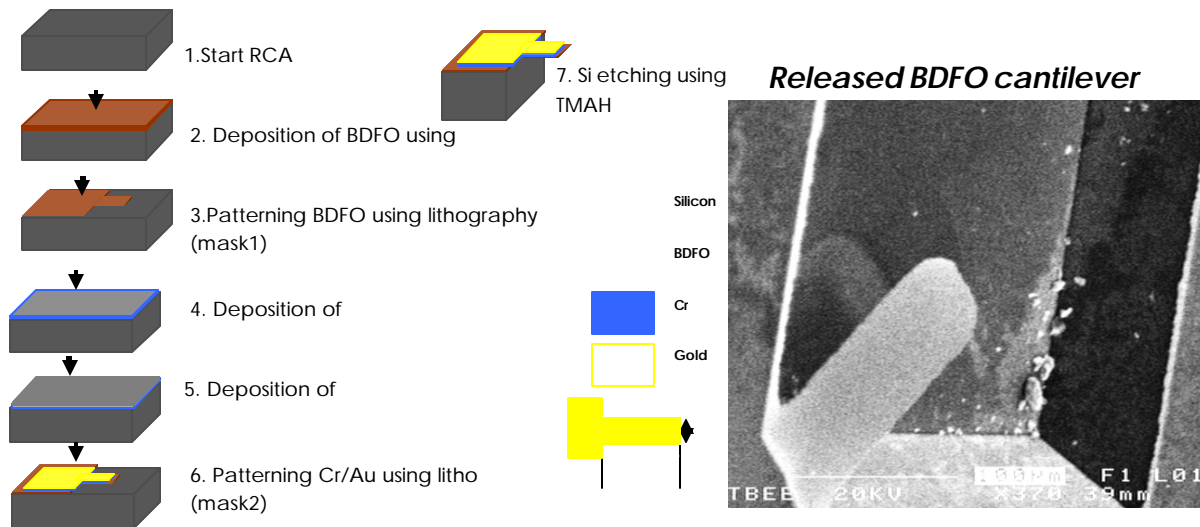


Figure 1(a)

Figure 1(b)

Cantilever deflection with applied magnetic and electric field

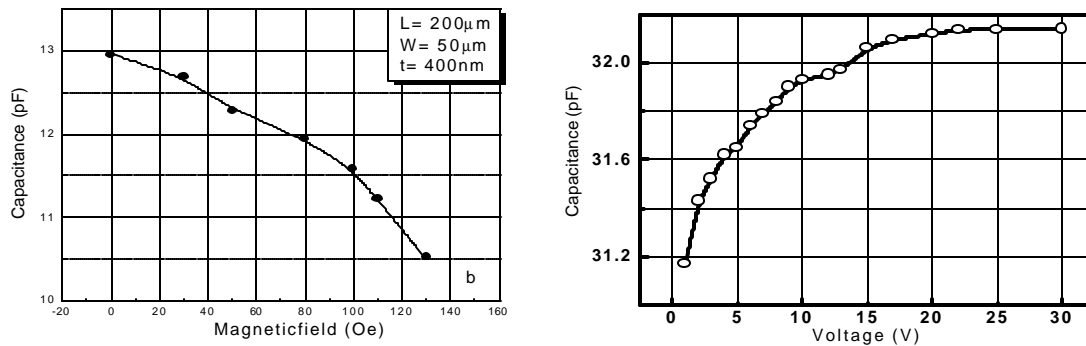


Figure 2(a)

Figure 2(b)