FABRICATION OF PIEZOELECTRIC THICK-FILM MICROACTUATOR

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ABSTRACT

THIS PAPER PROCEEDED TO LOW-TEMPERATURE SINTER PIEZOELECTRIC POWDER SLURRY BLEND TO MAKE PIEZOELECTRIC THICK FILM GREEN PASTE BY DOCTOR BLADE. WHICH PIEZOELECTRIC GREEN PASTE WAS DEPOSITED ON THE SILICON WAFER TO MAKE MONOMORPH ACTUATOR MODULUS BY CO-SINTER AT A TEMPER -ATURE OF 900℃ FOR ONE HOUR,THEN CUT THE ACTUATOR MODULUS INTO AN ARRAY OF PIEZOELECTRIC THICK FILM BY DICING SAW MACHINE. WE CAN USE IMPEDANCE ANALYZER TO MEASURE RESONANCE TO CA -LCULATE THE YOUNG'S MODULUS OF PIEZOELECTRIC THICK FILM, AND MEASURE THE DISPLACEMENT BY LASER METER TO THE PIEZOELECTRIC COEFFICIENT . ACCORDING THE LITERATURE, WE CAN FIND THAT THE PIEZOELECTRIC THICK FILM WAS VERY EASY TO REACT WITH SILICON WAFER AT HIGH TEMPERATURE SINTER . SO WE TRY TO REDUCE THE TEMPERATURE O -F SINTERING TO MAKE THE STRUCTURE MORE DENSER,AND PRINTING BARRIER LAYER WITH ISOLATED THE PB PARTICLE OF PIEZOELECTRIC DIFFUSED TO SILICON WAFER,THEREFORE THE PIEZOELECTRIC COEFFICI -ENT OF THICK FILM IS INCREASED.THE EXPERIMENT WAS DEPOSITED BOTTOM ELECTRODE,PIEZOELECTRIC THICK FILM AND TOP ELECTRODE ON THE SUBSTRATES,WHICH SUBSTRATES MAY BE ZRO2 OR SILICON WAFER.

Keywords : PIEZOELECTRIC, LOW TEMPERATURE SINTER, ACTUATOR, PRINTING, BARRIER LAYER

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