

PIEZOELECTRIC MACRO-FIBER COMPOSITE ACTUATOR AND MANUFACTURING METHOD

ABSTRACT

A method for fabricating a piezoelectric macro-fiber composite actuator comprises providing a piezo-electric material (20) which has a first side and a second side. The method further comprises cutting the piezoelectric material to provide a plurality of piezoelectric fibers (26) in juxtaposition. Two electrically conductive films (28, 42) are then adhesively bonded to the two sides of the piezo-electric material. The first film (28) has first and second conductive patterns (30, 32) formed thereon which are electrically isolated from one another and in electrical contact with the piezo-electric material. The first and second conductive patterns of the first film each have a plurality of electrodes to form a pattern of interdigitated electrodes. In one embodiment, the second film does not have any conductive patterns. In another embodiment, the second film (42) has a pair of conductive patterns (48, 52) similar to the conductive patterns of the first film. In another embodiment, the piezoelectric macro-fiber composite actuator further comprises a pair of anisotropically conductive sheets (210, 212) each positioned between one of the electrically conductive films and one side of the piezoelectric material.

Fig. 5