PART 2: MODELLING AND ANALYSIS OF MICROMOTORS

Description

Ultrasonic micromotors, as a kind of piezoelectric actuators, have the advantages of high torque at low speed, quick response, quiet operation and compact size compared to conventional electromagnetic motors. Due to the good application prospects and the short history of this field, there is still great potential for future endeavors in this area. Not only is the development of more types of ultrasonic motors possible, further studies on theoretical aspects for deeper understanding of ultrasonic motors and design improvement are also necessary.

Technique developed

Modelling and analysis of several types of ultrasonic micromotors have been done. Some problems concerned have been discussed. The work carried out includes:

- Analysis of cylindrical ultrasonic micrmotor
- Mathematical model on ultrasonic elastic fin micromotor
- Optimizing design of ultrasonic linear motors

Example

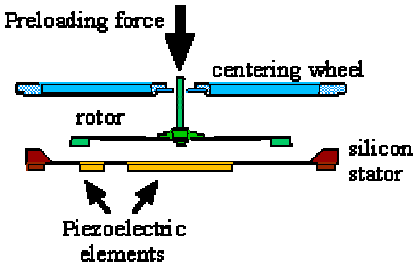

Fig.3. Schematic view of an elastic fin ultrasonic micromotor

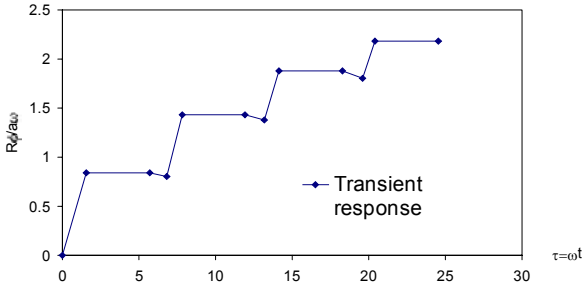

Fig. 4. Transient response of rotor at beginning period based on the model