

Piezoelectric Polymers for Energy Harvesting

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INTRODUCTION

Energy is always in demand. And methods for generating energy without the use of fossile fuels is more needed than ever. Therefore we want to make an alternative energy generating method. Our idea is based on Piezoelectric materials. Piezoelectric materials generates a voltage when exposed for an external stress.

Through a 3 week special course we want to perform experiments and finally design fabricate a plate made of piezoelectric polymer PVDF. The concept is then, that the plate should be placed where many people walks. People would then step on the plate, which applies a stress in the implemented piezoelectric polymers and a voltage is generated. It is possible to harvest this generated energy.

THEORY

We are going to combine theory learned in the courses: Micro-1 and Fabrication of micro- and nanostructures. Besides this we are going to use theory from articels found on the subject.

Method

The polymer we wish to use is PVDF in its electric active beta-phase. PVDF in alpha phase is possible to buy from a danish company called LINATEX. We are going to convert the alpha-phase PVDF to beta-phase through a method called polling, which consist of heating the material and then applying an electric field. When the beta-phae is obtained we are going to attach electrodes to the polymer. A circiut should then be established for harvesting the generated energy. And finally the device should be coated in a form of packaging, which prevent damages but will allow the stress in the piezoelectric polymer.

Results

The project will be carried out in the 3-week course period in June 2014 and no results is therefore yet obtained.

CONCLUSION

We will throughout a special course in the 3-week course period in June 2014 make a energy harvesting device. The device contains piezoelectric polymers, which generate a voltage when bended.