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Abstract

In this work, a stretchable piezoelectric elastic composite has been developed by incorporating $\text{PbZr}_{0.52}\text{Ti}_{0.48}\text{O}_3$ (PZT) particles into polymer matrix. The output voltage and current can reach 8V and 0.4 μA , respectively. Likewise, the steady piezoelectric signal can respond to different strain rates. The measurement on human body shows that the piezoelectric composite can be used to capture kinetic energy and monitor limb motion for body sensor network application. This work is significant for the conformal assembly of piezoelectric devices used in artificial intelligence system.

Keywords: composite materials, nanocomposite, piezoelectric, stretchable, PZT

1. Introduction

Sensitive materials are crucial for **artificial intelligence** (AI) system to acquire environmental parameters like temperature, pressure, voice and light [1, 2].

Piezoelectric material is important for **pressure measurement** and energy harvesting [3-6]. Conventional piezoelectric devices have no flexibility because of materials mechanical rigidity, which severely limits its application in artificial electronic skins

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