

Abstract:

Cellular polypropylene-calcium carbonate based piezoelectric films were obtained using biaxial stretching and gas-mediated inflation followed by a corona discharge treatment using home-made devices. The obtained results revealed a cellular structure that develops at the interface between the solid particles and the polymer matrix and the final piezoelectric coefficient was found to depend both on the gas pressure profile and on time. The inflation step gives better results when the gas pressure is increased in stepwise manner allowing the gas to adequately intrude the cavities and maintain the required pressure. The overall results are discussed in terms of processing conditions and in terms of the developed microstructure. POLYM. ENG. SCI., 2012. © 2012 Society of Plastics Engineers