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Morphological analysis of PVDF nanofibers with ZnO for gas sensors

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ABSTRACT

The high levels of air pollution reached, the growing concern about global warming and the monitoring of daily life have driven the development and improvement of increasingly smaller, fast in detection, selective, low-cost sensors, among other characteristics. Therefore, research involving gas detection has become of utmost importance. Many materials have been researched for gas detection, including nanofibers and metal oxides. The electrospinning technique has been highlighted for the development of nanofibers, as it has numerous advantages over other techniques. Several polymers can be electrospun, including poly(vinylidene fluoride) – PVDF, which, due to its properties, have gained prominence. Zinc oxide has excellent electrical properties and has been widely studied for gas detection. The objective of this work is to produce polyvinylidene fluoride (PVDF) nanofibers, with the addition of ZnO, in the proportion of macroparticles in 3%, and pure PVDF. The results of the production of PVDF/ZnO nanofibers will be presented by scanning electron microscopy (SEM), with and without backscattering; The nanofibers exhibited diameters between 200 and 300 nm. Gas Testing showed that the addition of 3% ZnO increased sensitivity to ammonia gas.

Keywords: Nanofiber, ZnO, Gas Sensor.

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