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Author: id="aut0005" orcid="0000-0002-5172-0636" biographyid="vt0005"> Ilaria Fratoddi Iole Venditti Cesare Cametti Maria Vittoria Russo



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Chemiresistive Polyaniline-Based Gas Sensors. A Mini Review

Ilaria Fratoddi.[‡], Iole Venditti.[‡], Cesare Cametti.[‡] and Maria Vittoria Russo[‡]

[‡]*Department of Chemistry, University of Rome "La Sapienza", Rome, Italy*

[‡]*Department of Physics, University of Rome "La Sapienza" Rome, Italy and CNR-INFM SOFT Unita' di Roma1*

Abstract

This review focuses on some recent advances made in the field of gas sensors based on polyaniline [PANI], a conducting polymer with excellent electronic conductivity and electrochemical properties. Conducting polymers represent an important class of organic materials with an enhanced resistivity towards external stimuli. Among them, PANI polymers have attracted wide interest because of the versatility in their use, combined with the easy of synthesis, high yield and good environmental stability, together with a favorable response to guest molecules at room temperature. Moreover, PANI can be shaped into various structures with different morphologies and the possibility of obtaining nanofibers, in addition to thin films, has opened a rapid development of ultrasensitive chemical sensors, with improved processability and functionality. This review provides a brief description of the current status of gas chemiresistive sensors based on polyaniline and highlights the properties and applications of these devices in diverse range of applications.

Keywords:

Gas sensors; Polyaniline; Chemiresistive response.

1. Introduction

Chemical sensors are generally based on the concomitant presence of two elements, a recognition element (active element) sensitive to stimuli produced by various chemical compounds (analytes) and a transduction element, that produces a signal whose magnitude is related, through a known relationship, to the concentration of the analyte itself.

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