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- 了解Elsevier公司和ScienceDirect全文数据库覆盖的学科领域

- 学习如何通过ScienceDirect查找信息
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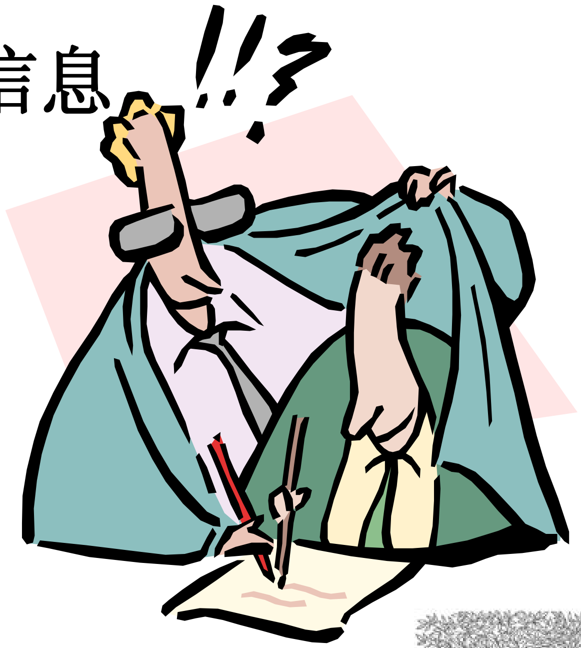
  - 浏览



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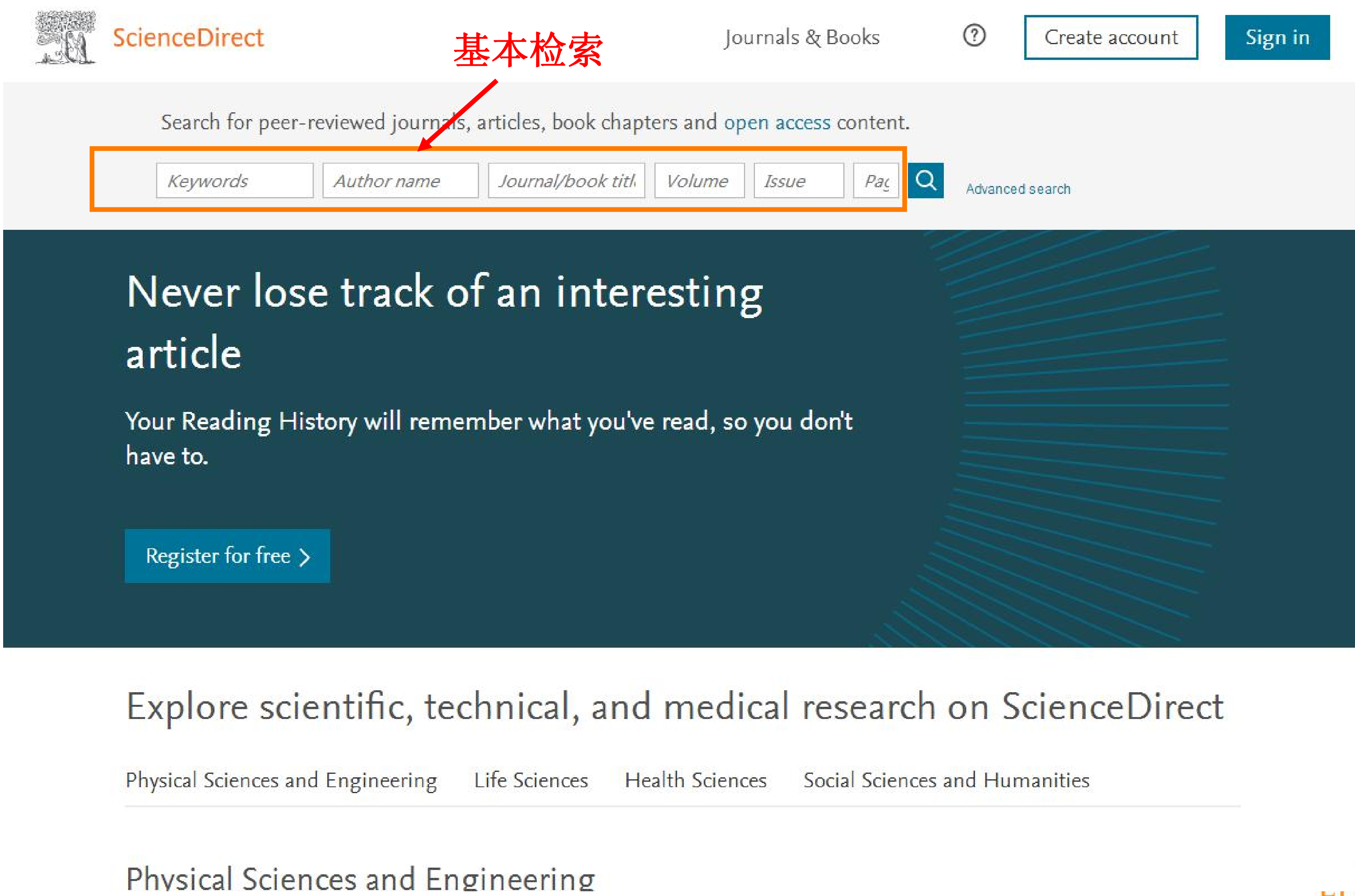

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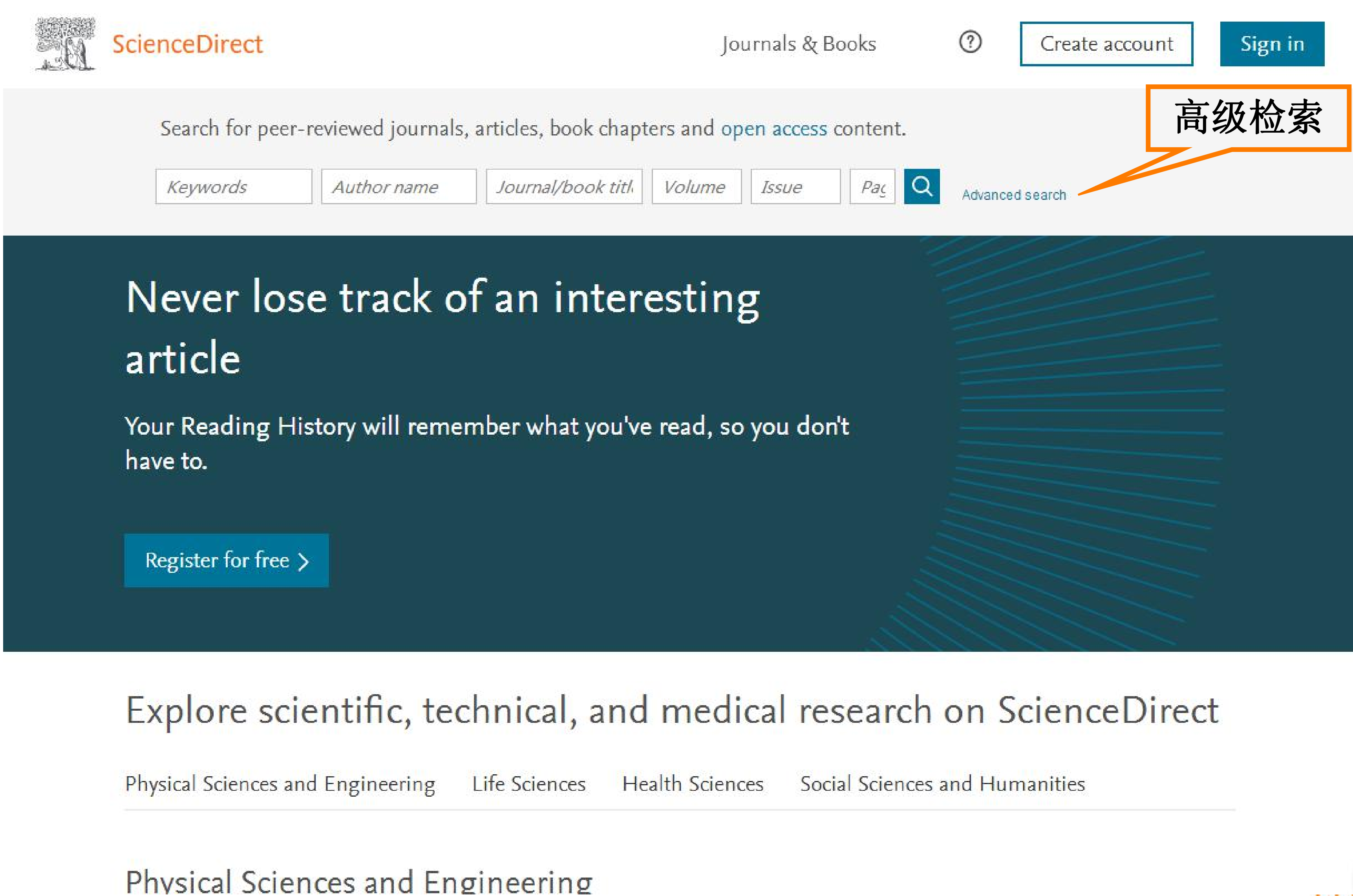
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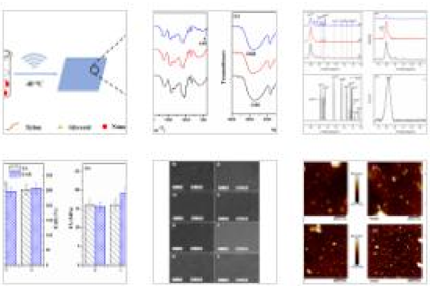

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Tables (1)

Table 1

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International Journal of Biological Macromolecules

Volume 132, 1 July 2019, Pages 978-986

Effects of nano-ZnO and nano-SiO_2 particles on properties of PVA/xylan composite films

Xinxin Liu, Xiaofeng Chen, Junli Ren, Minmin Chang, Bei He, Chunhui Zhang

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文章摘要

Abstract

The effects of nano-ZnO and nano-SiO_2 on the properties of PVA/xylan composite films were investigated in this work. Results showed that nano-ZnO and nano-SiO_2 could effectively improve the mechanical strength, moisture and oxygen barrier properties and surface hydrophobic property of the composite films. The results of FTIR and XRD indicated the interaction of hydrogen bonds between nanoparticles and PVA and xylan. When the contents of nano-ZnO and nano-SiO_2 in the composite films were 3%, the tensile strength was increased to 20.4 MPa and 22.5 MPa, respectively, while water vapor permeability (3.14 and $3.03\times10^{-11}\,g\cdot m^{-1}\cdot s^{-1}\cdot Pa^{-1}$) and oxygen permeability (5.28 and $5.003\,cm^3\cdot m^{-2}\cdot 24\,h^{-1}\cdot 0.1\,MPa^{-1}$) reached the minima. With the increase of nano-ZnO and nano-SiO_2 dosage, the solubility of composite films was increased. When the contents of

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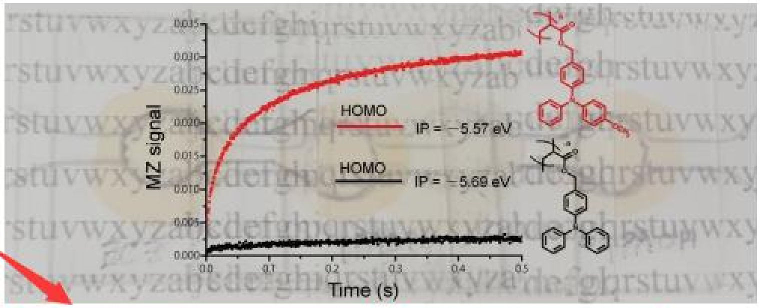
Abstract

Photorefractive performances of the composites using two kinds of photoconductive triphenylamine-based polymer have been compared and investigated. One polymer is poly(4-(diphenylamino)benzyl acrylate) (PDAA). The other is newly synthesized one of photoconductive acrylate polymer with methoxy substituted triphenylamine pendant, poly(4-((4-methoxyphenyl)(phenyl)amino)benzyl acrylate) (PMPAA). The methoxy substituent in PMPAA does not only shift the highest occupied molecular orbital (HOMO) level of the polymer, but also effectively enhances the chromophore orientation. Larger phase shift is confirmed by using the modified photoconductive polymer of PMPAA. The plasticizer of (4-(diphenylamino)phenyl)methanol (TPAOH) (IP = −5.64 eV) works as an effective trap in the PDAA (IP = −5.69 eV)-based composite, resulting in higher diffraction efficiency. Diffraction efficiency of 70% and fast response time of 25 ms (dominant) is measured at 532 nm under the moderate electric field of 45 V/μm.

Graphical abstract



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