

# Electrospun nanofibrous ZnO/PVA/PVP composite films for efficient antimicrobial face masks



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This screenshot shows the lower portion of the ScienceDirect article page. The article title 'Electrospun nanofibrous ZnO/PVA/PVP composite films for efficient antimicrobial face masks' is repeated. Below the title, the authors are listed: K. Geetha<sup>a</sup>, D. Sivasangari<sup>a</sup>, Hyun-Seok Kim<sup>b</sup>, G. Murugadoss<sup>c</sup>, and A. Kathalingam<sup>d</sup>. Each author's affiliation is provided in a list below:   
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The page also includes the publication timeline: 'Received 20 April 2022, Revised 5 May 2022, Accepted 13 May 2022, Available online 20 May 2022, Version of Record 20 August 2022.' and a 'Check for updates' button. On the right side, the 'Other articles from this issue' section is expanded to include 'The modeling and mechanical properties prediction of whisker-reinforced ceramic...' and 'Investigation of the effect of Berkovich and Cube Corner indentations on the...'. A 'FEEDBACK' button is visible at the bottom right.

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### Abstract

Air pollution is a major concern for the global community due the environmental degradation and human health related issues. Along with vehicular gaseous discharges, there are microbial contaminants in our atmospheric air causing health problems. Different types of innovations have been carried to produce efficient face masks suitable to filter both particulate and microbial contaminants. In this paper, low cost and highly stable nanofibrous ZnO/PVA/PVP composite films created utilizing electrospinning technique, and their various properties, including antimicrobial activities are reported in the first time. Zinc Oxide (ZnO) nanoparticles dispersed homogeneously mixed PVA/PVP polymer blend solution was used in the electrospinning system to prepare ZnO/PVA/PVP composite nanofiber. The nanofiber properties have been investigated utilizing scanning electron microscope (SEM), Fourier transform infrared (FTIR) spectroscopy, Raman spectroscopy, UV-Visible spectroscopy and X-Ray Diffraction (XRD). Antimicrobial activity study conducted on the fibers showed good results, indicating the usefulness of the prepared nanofibrous material for antimicrobial face masks.

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