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| Title | Electrical Activities of Ginger Extract-Mediated Silver Nanoparticles in Bio-electrochemical Cell | | |
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| Published Journal Name | Micro and Nanoelectronics Devices, Circuits and Systems | | |
| Type of Publication | Lecture Notes in Electrical Engineering | | |
| Volume | 1067 | Issue |  |
| Publisher | Springer, Singapore | | |
| Publication Date | 23 September 2023 | | |
| ISSN |  | | |
| DOI | https://doi.org/10.1007/978-981-99-4495-8\_38 | | |
| URL |  | | |
| Other Related Info. |  | | |
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| Abstract |  |
| The rising demand for electricity is becoming a tread throughout the world. In this study, a modified Zn/Cu electrodes-based bio-electrochemical cell (BEC) has been developed by using the ginger extract electrolyte and silver nanoparticles (Ag NPs). The effect of Ag NPs on the open circuit voltage (V), short circuit current (I), maximum power (P), power density (Pd), and internal resistance (R) of the BEC has been examined. Here, Ag NPs were formed via a rapid, non-toxic green synthesis process by using the ginger extract reducing agent. The functional groups in the ginger extract play an important role in reducing the Ag NPs from the Ag ions. The formation of Ag NPs was probed by X-ray diffraction spectroscopy (XRD) and UV–visible spectroscopy, and the active functional groups presented in the plant extract have been identified by using the Fourier transform infrared (FT-IR) analysis. The Ag NPs were incorporated in BEC to integrate the power and power density of cell. Such a modified Zn/Cu-based BEC can take the frontier forward for the integration of nanotechnology in low-cost electricity generation. | |