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**Papers Published in UGC Care List Journals for Session 2024-25**

Paper Published in UGC Care List Journals						
S. No.	Title of Paper	Name of Author	Title of Journal	Year of Publication	Citation Index	Institution Affiliation
1.	Recent advancements in cathode materials for high performance Li-ion batteries; Progress and Prospects	Dr. Gulshan Kumar	Journal of energy storage	2024	135	Govt. College Baldwara
2.	Depletion of Ozone Layer: Review in reference to galactic radiations	Dr. Gulshan Kumar	Environment conservation Journal	2024	6	Govt. College Baldwara
3.	Impact of Digital Payment Systems on Economic Growth in Developing Countries	Dr. Sunil Kumar	Urban India	2024		Govt. College Baldwara



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Review article

# Recent advancements in cathode materials for high-performance Li-ion batteries: Progress and prospects

Shruti Kaushik<sup>a</sup>, Tushar Mehta<sup>a</sup>, Prakash Chand<sup>a</sup>

Swati Sharma<sup>a</sup>, Gulshan Kumar<sup>b</sup>

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## Highlights

- The history and basic mechanism of Lithium-ion batteries are discussed.
- The review includes a comparative analysis of various





## Depletion of ozone layer: Review in reference to galactic radiations

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 TGFs (Terrestrial gamma ray)

## ABSTRACT

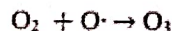
This review work represented the effect of various galactic activities, including sun cycles and some key elements of environmental pollution, in the variation of the ozone column of the earth's atmosphere. The various observational works by various researchers worldwide, including the data spared by various international agency are reviewed; the research design is based on the fact that measurable dissociation rates have been reported by various researchers only in the interaction of highly energetic charged contents of the galactic radiations with ozone with the fact that a wavelength of radiation and energy of 5 eV is required for its photolysis. In 2003, researchers reported an event that caused ozone depletion in the mesosphere to rise up to 80%. Based on the charge content of galactic radiations and solar flares in earth's crust's magnetic field, it was detected that charged particles move toward poles according to Fleming's left-hand rule. This means that the particle intensity changes with latitude, reaching its highest point near the earth's poles. Therefore, depletion of ozone in stratospheric space over the poles is primarily influenced due to its lower population density. The southern hemisphere experiences a significant lease of greenhouse gases, which exacerbates the ozone column's depletion, indicating a greater role for natural causes such as galactic interference in its depletion.

## Introduction

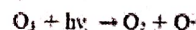
As evident from various spectroscopic studies, ozone is a well-established triatomic molecular oxygen molecule (Gerhard, 1932). Even with its lower concentration in the atmosphere ( $1 \text{ mg/m}^3$ ), it has a crucial role in protecting us from UV solar radiation (Barbe *et al.*, 2022b). The ozone has a non-homogeneous distribution in the atmosphere; its density increases with elevation from the earth's surface, forming maxima at altitudes of 20–25 km. The discovery of the 'ozone hole' in Antarctica in the 1970s stimulated research activities aimed at exploring the characteristics of ozone. The early studies have resulted in the conclusion that those anthropogenic activities that lead to increased CO<sub>2</sub> concentration in the atmosphere may be the cause of ozone layer depletion. As research and technology progressed, NASA's satellite data confirmed that the ozone hole spans the entire Antarctic continent (World Meteorological Organization (WMO), 2022). This critical situation led to the Montreal Protocol, which regulates the production and consumption of nearly 100 man-made chemicals, including chlorofluorocarbons (CFCs), mainly responsible for ozone depletion.

According to the Chapman Cycle (Rowland, 2006), solar UV radiations in the stratosphere (with full

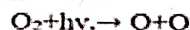
absorption of the most energetic fraction of solar radiations) create the ozone layer.



Ozone can also be recycled into molecular oxygen by reacting with photon:

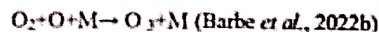


(where the wavelength of UV radiations is less than 240 nm and energy > 5 eV).



(where the wavelength of UV radiations is less than 240 nm and energy > 5 eV).

One thing is to be noted only a limited fraction of solar spectrum has the photons of such a high amount of energy. Ozone is produced when one oxygen atom and one oxygen molecule collide in presence of another particle M which could be N<sub>2</sub> or O<sub>2</sub>.



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# Impact of Digital Payment Systems on Economic Growth in Developing Countries (Pages 127-135).pdf

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## IMPACT OF DIGITAL PAYMENT SYSTEMS ON ECONOMIC GROWTH IN DEVELOPING COUNTRIES

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### ABSTRACT

This study explores the transformative impact of digital payment systems on economic growth in developing countries, with a focus on three key indicators: GDP growth, financial inclusion, and employment rates. Utilizing data from Kenya, India, and Brazil over the period from 2010 to 2023, the research employs a mixed-methods approach, combining quantitative analysis of secondary data with qualitative insights from interviews with stakeholders in the digital payment ecosystem. The quantitative analysis reveals a significant positive correlation between the adoption of digital payment systems and the economic indicators studied. Specifically, increases in digital transaction volumes are closely associated with improvements in GDP growth and employment rates.



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