

1. Section Collection: Metals and Radioactive Substances

2. Deadline for Manuscript Submissions: **2024-08-31**

3. Section Editors' Information:

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Research Interest:	<i>Computational chemistry, computer-aided drug design, chemical biology, bioinformatics, computational materials science, organic synthetic chemistry, agrochemistry and medicinal chemistry.</i>

4. Summary

Ajoy Kumer is a highly respected and renowned research scholar with expertise in various fields, including computational chemistry, computer-aided drug design, chemical biology, bioinformatics, computational materials science, organic synthetic chemistry, and medicinal chemistry besides the synthetic technique of Ionic Liquids. On August 1, 2023, he joined the Department of Chemistry at the College of Arts and Sciences, IUBAT—International University of Business Agriculture and Technology—continuing his academic journey.

Before his current position, Ajoy Kumer held significant roles in academia and industry. From January 2023 to July 31, 2023, he served as a Professor (Assistant) in the Department of Chemistry at the European University of Bangladesh, Faculty of Science and Engineering. During his time there, he contributed as a Senior Lecturer from September 26, 2019, until December 2022 and previously as a Lecturer from May 2016 to September 25, 2019.

In his professional journey, Ajoy Kumer also gained valuable experience in the industry, working as an Assistant Executive at SGS Bangladesh Ltd., a prominent multinational company known for its third-hand testing laboratory services.

In recognition of his expertise, Ajoy Kumer is also an honorary Professor (Assistant) with the Novel Global Community Education Foundation (NGCEF) in Australia. Furthermore, he actively contributes to the academic community as an editorial board member for three renowned international journals, an associate editor for another rewarded journal, and a reviewer for more than 95 international ISI or Scopus indexed journals, the total sum of which impact factor is more than 150, and 20 h-index and 39 i10 index google citation scientist.

With his extensive experience and passion for research and academia, Ajoy Kumer continues to make significant contributions to the fields of science and chemistry, further enriching our understanding and knowledge in various domains.

Throughout his career, he has demonstrated exceptional leadership in various voluntary and significant academic and societal roles, coupled with an unwavering commitment to academic excellence. He boasts an impressive academic background, having earned a B.Sc (Honours) in 2014 and an M.S by research in 2016 from the University of Chittagong. Subsequently, he obtained an MPhil in Organic Chemistry from Bangladesh University of Engineering and Technology (BUET) in 2019.

During his MS and Mphil degrees, he experienced the expertise on synthetic techniques on Ionic Liquid-engineering material for 21st century and designer solvent, its purification and biological uses as potential inhibitor. Moreover, he confronted computational study on ionic liquids having a good number of research articles in reputed journals.

During his tenure at his current working station, Prof. Kumer established the Laboratory of Computational Research for Drug Design and Material Science, equipped with over 17 simulation software. Over the past four years, he has published an impressive total of 94 original research articles and secured three patents. His scholarly achievements have earned him a distinguished h-index, solidifying his status on google citations as a prominent research scholar in his field. His expertise has garnered invitations to numerous scientific conferences, both domestic and international, where he has served as a speaker and invited speaker. Additionally, he has conducted five national and international workshops on Computer Aided Drug Design as a trainer.

Furthermore, Prof. Kumer has made valuable contributions to the agricultural pharmaceutical industry as a Consulting Scientist at the Department of Research and Development. In this role, he successfully modified and developed the formulation some agro-based drugs having the market availability. Outside of his professional accomplishments, Prof. Kumer actively engages in social contributions as the General Secretary (founder) of the Scientific Foundation for Cancer Research, Bangladesh.

In his leisure time, Prof. Kumer indulges in his hobbies, which include train travel accompanied by reading books or novels. He also enjoys fishing and visiting agricultural crops in the countryside.

Overall, Prof. Ajoy Kumer's outstanding achievements and multifaceted contributions reflect his dedication and passion in both academic and societal endeavors.

Dear Colleagues,

Currently, while both metals and radioactive substances have their importance, it's essential to handle radioactive materials with care due to their potential health and environmental hazards. Strict regulations and safety protocols are in place to manage the use and disposal of radioactive substances safely. Metals and radioactive substances are two distinct types of materials with unique properties and applications.

Metals:

Metals are a class of elements characterized by their ability to conduct electricity, malleability, ductility, and luster. They have been essential to human civilization for thousands of years and have a wide range of applications in various industries. Some of the key points about metals include:

- a) **Structural Materials:** Metals are commonly used in construction and engineering due to their strength, durability, and versatility. They form the backbone of buildings, bridges, vehicles, and machinery.
- b) **Conductivity:** Many metals, such as copper and aluminum, are excellent conductors of electricity. This property is crucial for wiring, electrical components, and power transmission.
- c) **Thermal Conductivity:** Metals also exhibit high thermal conductivity, making them valuable for applications involving heat transfer, like radiators, heat exchangers, and cooking utensils.
- d) **Magnetism:** Certain metals, like iron and nickel, are magnetic and are used in the production of magnets and electromagnets for various industrial and technological applications.
- e) **Corrosion Resistance:** Some metals, such as stainless steel, have excellent resistance to corrosion, making them suitable for use in harsh environments, including marine applications.
- f) **Transportation:** Lightweight metals like aluminum and magnesium are widely used in the automotive and aerospace industries to reduce weight and improve fuel efficiency.
- g) **Packaging:** Metals like aluminum and tinplate are used in food and beverage packaging due to their ability to protect contents from external factors and extend shelf life.

Radioactive Substances:

Radioactive substances, on the other hand, are materials that contain unstable atomic nuclei and emit ionizing radiation in the form of alpha particles, beta particles, or gamma rays. While the use of radioactive materials is subject to strict regulations and safety measures due to their potential hazards, they have important applications in various fields:

- I. **Nuclear Energy:** Radioactive substances are used as fuel in nuclear power plants, where controlled nuclear reactions release energy to generate electricity.
- II. **Medicine:** Radioactive isotopes are used in medical diagnostics (e.g., PET scans) and cancer treatment (radiotherapy) to image and treat diseases.
- III. **Industrial Applications:** Radioactive sources are employed in industry for tasks such as measuring thickness, density, and structural integrity, as well as detecting flaws in materials through radiography.
- IV. **Research and Testing:** Radioactive substances are essential in scientific research, including nuclear physics, chemistry, and environmental studies, where they serve as tracers and markers in experiments.
- V. **Smoke Detectors:** Some household smoke detectors contain small amounts of radioactive material (e.g., americium-241) to detect smoke and trigger alarms.
- VI. **Carbon Dating:** Radioactive carbon isotopes (e.g., carbon-14) are used in archaeology and geology to determine the age of organic materials and study historical contexts.

In summary, metals are versatile materials with a wide range of applications, while radioactive substances, though more specialized and potentially hazardous, play crucial roles in energy production, medicine, industry, and scientific research. Safety precautions and regulations are paramount when working with radioactive materials due to their radioactive decay and potential health risks.

Keywords: Metals

Metallic properties, Conductivity, Ductility, Malleability, Corrosion resistance, Alloy, Ferrous

*metals, Non-ferrous metals, Lightweight metals, Structural materials, Electrical conductivity
Thermal conductivity, Magnetism, Automotive materials, Metallurgy, Radioactive substances,
Radiation, Radioactivity, Nuclear energy, Isotopes, Half-life, Ionizing radiation, Radioactive
decay, nuclear physics, Radioactive materials, Radiation therapy, Radiography, Radioactive
waste, Nuclear medicine, Radiation safety, Alpha particles, Beta particles, Gamma rays,
Radiometric dating, Nuclear reactors*