

# CALL FOR PAPERS

Structural and functional modifications of polymers greatly improve their properties and enhance their range of possible applications. A wide range of processing techniques is available for imparting different structural features and functionalities in polymers. Plasma, high-energy radiation, microwave, NIR, UV, and ultrasonication are some of such highly effective polymer modification techniques. Over the past few years, these approaches have been extensively researched and have been demonstrated to yield significant advantages over conventional chemical processes. Natural and synthetic polymers can both be modified by such techniques and a large amount of possible applications, spanning from food technology to energy storage, can benefit from such approaches. However, the translation of such findings into commercially viable products and technologies is still limited, and there is great potential still for further elucidating fundamental and applied aspects of such processes.

Recently, there have been significant advances in radiation processing techniques. The availability of UV assisted three-dimensional printers, powerful electron beam machines and portable microwaves, ultrasonicators, and UV reactors has provided a unique opportunity for researchers to further expand the potential of such unconventional approaches for polymer modification. On the material side, there has been significant progress on the development of specialized polymers, nanomaterials, and nanocomposites, which have well-defined microstructures and functionality. The beneficial effects of radiation processes on such important multiphase polymers and composites, however, are not yet well explored. On the processing side, polymer manufacturing techniques, such as extrusion and curing, are also now well poised to be integrated with modern radiation-based technologies.

This special issue welcomes original research and review articles that discuss advanced radiation techniques for structural and functional modification of polymers for different applications such as food technology, agriculture, environment, healthcare, and energy. The issue aims to cover the utilization of plasma, high-energy radiation (Gamma rays, X-rays, and electron beam), UV, NIR, microwave, and ultrasonic waves for polymer manufacturing, processing, and product design. The scope covers the use of polymers in blends, alloys, composites, fibers, coatings, nanoparticles, and gels for diverse applications.

Potential topics include but are not limited to the following:

- ▶ Gamma rays, X-rays, electron beam, UV, NIR, microwave, plasma, or sonochemical processes for modification of polymers for biotechnology, food technology, and agriculture applications
- ▶ Process simulation, modeling, and validation protocols for radiation processing of polymers
- ▶ Radiation functionalized polymers for the removal of microbes, pollen, contaminants, and toxic agents
- ▶ Radiation processed polymers for electronics, sensing, and energy storage applications
- ▶ UV and electron beam lithography and 3D printed structures
- ▶ Fabrication of targeted polymer architecture, scaffolds, hydrogels, nanogels, and cryogels for healthcare applications
- ▶ Surface modifications of polymers using radiation approaches

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/apt/arpppf/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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