FUNCTIONAL MODIFICATION OF POLYMER COMPOSITES USING ELECTROMAGNETIC RADIATION

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The use of polymer composites has seen a remarkable rise in recent years, driving progress across multiple areas of material science.Polymers often lack the necessary surface properties required for certain applications. However, surface modification techniques have become essential in plastics and various other industries, enabling the transformation of low-cost materials into high-value end products.While many advanced technologies have been developed to modify these materials, there remains a demand for methods that are simple, energy-efficient, controllable, cost-effective, timesaving, and environmentally sustainable. Electromagnetic wavescan significantly modify materials both positively and negatively depending on their applications. Among these, microwave technology stands out as a powerful approach for material synthesis and modification. Its advantagessuch as rapid, selective, and uniform heating, along with direct molecular-level energy transfermake it particularly promising. This presentation will highlight the use of microwave energy as an alternative method for processing materials, with a focus on current research in our lab, especially its potential applications in the medical field.

Keywords - Surface Modification, Microwave Radiation, Polymer Composites, Material Science