INFLUENCE OF PLASMA TREATMENT ON LUMINESCENCE INTENSITY OF BIOMIMETIC LUMINESCENT TEXTILE

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ABSTRACT

The production of light by living organisms known as bioluminescence can be seen widely in marine and terrestrial creatures. This phenomenon of natural illumination is a chemical oxidation process, most of the light producing reaction involves a luciferase (enzyme) and luciferin (substrate) along with co-factors such as ATP, Mg+2 and Ca+2. In the present study, we demonstrate a biomimetic approach that enables luminosity on textiles. The enzyme and substrate components of luminous bacterial system were incorporated into plasma activated PET textile material and luminescence intensity was investigated. The intensity measurement allowed us to understand the interaction of enzymes adsorbed on textile material in presence of substrate. The analysis data revealed that the photons of light emitted by the reaction of luminous bacterial system on textiles could be measured in the form of relative light units (RLU). The research study propose a bioluminescence sytsem that can be used to obtain luminescent textile.