

## **BIOCIDAL FUNCTIONALIZATION OF PET WITH N-HALAMINE USING BY SUPERCRITICAL CARBON DIOXIDE**

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### **ABSTRACT**

Our research focuses on surface modification and functionalization of textile materials using resource effective processes for smart and functional textiles.

In this paper, we focus on functionalization of PET in supercritical carbon dioxide (scCO<sub>2</sub>) with antibacterial N-halamines. Integration of these compounds to polymeric chain increases stability, lowers toxicity, and enhances biocidal efficacy. N-halamines are good candidates since they can be incorporated into polymeric surfaces by various application methods and kill bacteria safely and efficiently by releasing positive halogens to oxidize intracellular components of the cells. The lost halogens can be recharged to restore biocidal capability.

In this study, the N-halamine derivate was interpenetrated into PET using by scCO<sub>2</sub> and then investigated the presence of the N-halamine on surface after treatment by Fourier Transform Infrared Spectroscopy (FTIR) and determined the antibacterial activities.

**Key Words:** Polyester, surface modification, biocidal surface, N-halamine, supercritical carbon dioxide