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(57) Abstract :

ABSTRACT OF THE INVENTION BIOPOLYMER BASED COMPOSITE AND A METHOD OF PREPARATION THEREOF

The present disclosure relates to an eco-friendly and sustainable composite, preferably in the form of microbead designed as a sustainable alternative to plastic microbeads in cosmetic and personal care products. The composite incorporates banana pseudostem-derived cellulose, orange-peel powder, and sodium alginate, crosslinked via a dual-stage Ca²⁺ ionotropic gelation process, and stabilised through an air-drying method that enhances bead density and structural stability. The composite of the present disclosure exhibit controlled-swelling, superior oil/surfactant stability, aligning with global microplastic regulations and sustainable cosmetics initiatives.

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