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PO45 – PO52

GRAPHENE AS FUNCTIONAL AND TEXTURIZING AGENT IN COSMETICS

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This research is focused on a natural agent of great industrial interest: **GRAPHENE**.
Graphene is an allotropic form of carbon and it's obtained from graphite by physical expansion: thus it is a product free from harmful chemical substances and it is generally classified as an eco-friendly product. Graphene has very particular properties: it is one hundred times stronger than steel, it has high elasticity, flexibility, high thermal conductivity and light/UV interaction. Graphene means, as it is well known, a material consisting of carbon atoms arranged in a monoatomic layer, with each atom bound to three neighbours in a honeycomb structure [1,2]. The term "graphene" is here to be understood strictly, i.e. it is not inclusive of chemical derivatives of graphene, such as graphane, fluorographene, graphene oxide, etc. This natural agent has been included in skin (make-up) [3,4] and hair (hair coloring and strengthening treatments) [5] products. There is a growing interest in multifunctional cosmetics capable of combining make-up with beneficial effects (deep hydration, water resistance, shine, photoprotection). As far as face make-up is concerned, it must be a very light and nude look coverage. The compositions obtained give texture characteristics, excellent spreadability, long lasting, shining and nude effect to the skin while retaining covering properties, with protection against photoaging and thermal dispersion, anti-pollution and antioxidant effects. The inclusion of graphene in lip products has given rise to products with a particularly high degree of sun protection, together with excellent rheological, physical, functional and sensorial properties, and high stability against the photoxidative damage. The research of graphene applications in hair products, through the new compositions has allowed the solution of the following problems: the excessive product permanence, the restoring of the original color of natural grey hair, the damage of excessive exposition to heat treatment. In the present research graphene nanoplatelets (3-6 nm thickness and 4±2 micron particle size) is used as a concentrated aqueous paste, a powder or as solid granules depending on the characteristics required by the formulation. The compositions are eco-friendly, free from aggressive agents in both cases (make-up and hair treatment) and they have shown interesting application properties.

References

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