

Chapter 14

#### **Carbon Nanofiber in Cosmetics**

Archana Singh X

Book Editor(s): Madhuri Sharon, Maheshwar Sharon

First published: 19 February 2021

https://doi.org/10.1002/9781119769149.ch14

Citations: 4

# Summary

This chapter provides a glimpse of the application of nanotechnology in personal care and cosmetics products, and the possibility of the entry of carbon black fiber in many cosmetic products. Some of the important nanoparticles that are extensively used in enhancing the efficiency of cosmetics include titanium dioxide, zinc oxide, gold, silver, and selenium. Moreover, the role of the silent features and advantages of using these materials are discussed in this chapter. Nanomaterials are used in the manufacture of cosmetics as encapsulation or carrier system to transport agents into deeper skin layers where they activate skin metabolism, improve skin appearance, and act as an optimal UV protective filter in sunscreen. For the purpose of delivery of required nanoparticles from the cosmetics compositions it is imperative that they are formulated in composite forms. Carbon nanomaterials are considered to be safe for humans as well as for the environment because of their toxicological potencies.

References

Fronza, T., Guterres, S., Pohlmann, A., Teixeira, H., *Nanocosmetics: Towards the Establishment of Regulatory Frameworks*, 2007.

**Google Scholar** 

Raj, S., Jose, S., Sumodh, U.S., Sabitha, M., Nanotechnology in cosmetics: Opportunities and challenges. *J. Pharm. Bioallied Sci.*, **4**, 3, 186–193, 2012.

CAS PubMed Google Scholar

**≺** Back

## CAS Web of Science® Google Scholar

Faure, B., Salazar-Alvarez, G., Aahniyaz, A., Villaluenga, T., Berriozabal, G., de Miguel, Y.R., Bergstrom, L., Disperson and surface functionalization of Oxide nanoparticles for transparent photocatalytic and UV-protecting coatings and Sunscreens. *Sci. Technol. Adv. Mater.*, **14**, 2, 023001, 2013.

PubMed | Web of Science® | Google Scholar

Fathi-Azazarbyjan, A., Tan, P.L., Chan, Y.Y., Chan, S.Y., Ascorbic Acid for Sunscreen Agent Safe Use: Accumulation of Nano Zinc Oxide and Titanium Dioxide on the skin. *Sci Pharm.*, **81**, 4, 1141–1150, 2013.

PubMed Google Scholar

Scientific Committee on Consumer Products, Clarification on opinion SCCNFP/0932/05 on Zinc oxide. http://ec.europa.eu/health/ph\_risk/committees/04\_sccp/docs/sccp\_o\_167.pdf

**Google Scholar** 

Kokura, S., Handa, O., Takagi, T., Ishikawa, T., Yoshikawa, T., Silver nanoparticles as a safe preservative for use in cosmetics. *Nanomedicine: Nanotechnology, Biology, and Medicine* **6**, 4, 570–574, 2010.

PubMed | Web of Science® | Google Scholar

Jannathul, M.F. and Lalitha, P., J. Nanotechnol., 2015. Article ID 829526.

**Google Scholar** 

Gajbhiye, S. and Sakharwade, S., Silver Nanoparticles in Cosmetic. *J. Cosmet. Dermatol. Sci. Appl.*, **6**, 48–53, 2016.

CAS Google Scholar

Guan, B., Yan, R., Li, R., Zhang, X., Int., J., Selenium as a pleiotropic agent for medical discovery and drug delivery. *Nanomedicine*, **13**, 7473–7490, 2018.

CAS Web of Science® Google Scholar

**≺** Back

# CAS PubMed Web of Science® Google Scholar

Wissing, U., Ek, A.-C., Unosson, M., J. Nutr. Health Aging, 5, 1, 37–42, 2001.

## PubMed Google Scholar

Iannuccelli, V., Sala, N., Tursilli, R., Coppi, G., Scalia, S., Influence of lipo-sphere preparation on butyl-methoxydibenzoylmethane photostability, *Eur. J. Pharm. Biopharm.*, **63**, 2, 140–145, 2006.

CAS PubMed Web of Science® Google Scholar

Tursilli, R., Casolari, A., Iannuccelli, V., Scalia, S., Enhancement of melatonin photostability by encapsulation in lipospheres. *J. Pharm. Biomed. Anal.*, **40**, 910–914, 2006.

CAS PubMed Web of Science® Google Scholar

Spicer, P.T., Lynch, M.L., Hoath, S.B., Visscher, M.O., Cubosomes® and Self-Assembled Bicontinuous Cubic Liquid Crystalline Phases, in *Delivery System Handbook for Personal Care and Cosmetic Products*, pp. 603–620, 2003.

#### **Google Scholar**

Molly, B.A. and Prasanthi, N.L., Cubic Liquid Crystalline Nanoparticles (Cubosomes); A Novel carrier for Drug Delivery. *Int. J. Pharm. Sci. Res.*, **10**, 973–984, 2019.

CAS Web of Science® Google Scholar

Schreiber, J. and Albrecht, H., *Hair Care products with a content of disperse phase liquid crystals which form cubic phases*. Ger. Offen, Beiersdorf AG, Germany, DE. 2002a.

## **Google Scholar**

Schreiber, J. and Eitrich, A., Deodorant and antiperspirant products with a content of disperse phase liquid crystals which form cubic phases. Ger. Offen, Beiersdorf AG, Germany, De. 2002.

**Google Scholar** 

< Back

#### **Google Scholar**

Ribier, A., Biatry, B., Oily Phase in an Aqueous Phase Dispersion Stabilized by Cubic Gel Particles and Method of Making. L'Oreal (Paris, FR), USA, 1998.

#### **Google Scholar**

Svenson, S. and Tomalia, D.A., Dendrimers in biomedical applications-reflections on the field. *Adv. Drug Deliv. Rev.*, **57**, 15, 2106–2129, 2005.

#### CAS PubMed Web of Science® Google Scholar

Adams, G., Ashton, M.R., Khoshdel, E., Hydroxyl-functionalized dendritic macromolecules in topical cosmetic and personal care compositions, US Patent 6582685, assigned to Unilever Home & Personal Care USA, 2000.

## **Google Scholar**

Franzke, M., Steinbrecht, K., Clausen, T., Baecker, S., Titze, J., Cosmetic compositions for hair treatment containing dendrimers or dendrimer conjugates, US Patent 6068835, assigned to Wella Aktiengesellschaft, 2000.

#### **Google Scholar**

Petersen, R., Nanocrystals for use in topical cosmetic formulations and method of production thereof. US Patent 60/866233, assigned to Abbott GmbH & Co., 2008.

## **Google Scholar**

Sharon, M., Datta, S., Shah, S., Sharon, M., Photocatalytic Degradation of E. coli and S. aureus by Multi Walled Carbon Nanotubes. *Carbon Lett.*, **8**, 3, 184–190, 2007.

#### **Google Scholar**

Dickhof, S., Franklin, J., Busch, P., Kropf, C., Fischer, D., Cosmetic composition, for preventing greasy appearance on hair, contains nanoparticles of oxide, oxide-hydrate, hydroxide, carbonate, silicate or phosphate of calcium, magnesium, aluminum, titanium, zirconium or zinc. Patent DE19946784 A12001, 19 April 2001.

< Back

Sugar, H.S., Kobermick, S., Am., J., Associated with the use of Eye Cosmetics Containing Carbon–Black. *Opthalmology*, **62**, 1, 146–149, 1966.

**Web of Science® Google Scholar** 

Huang, X., Kobos, R.K., Xu, G., Hair coloring and cosmetic compositions comprising carbon nanotubes. Patent US7276088 B2, assigned to E. I. Du Pont de Nemours and Co, 2 October 2007.

**Google Scholar** 

Sandhu, A., J. Chromatogr. A, 1217, 1, 1–6, 2010.

**Google Scholar** 

**Citing Literature** 

## **ABOUT WILEY ONLINE LIBRARY**

Privacy Policy
Terms of Use
About Cookies
Manage Cookies
Accessibility
Wiley Research DE&I Statement and Publishing Policies
Developing World Access

# **HELP & SUPPORT**

Contact Us
Training and Support
DMCA & Reporting Piracy

#### **OPPORTUNITIES**

Subscription Agents Advertisers & Corporate Partners

#### **CONNECT WITH WILEY**

The Wiley Network

< Back

Copyright © 1999-2024 John Wiley & Sons, Inc. All rights reserved