

Beginning Cosmetic Chemistry. 3rd Edition

by R. Schueller and P. Romanowski

2009, 531 pages, hardcover

\$179.00

ISBN 978-1-932633-53-5

Allured Books

Carol Stream, IL, USA

Fax: 001 630-653-2192

e-mail: books@allured.com

www.allured.com/bookstore

Cosmetics, including toiletries, are closely connected with and are essential to daily life.

Cosmetic science, as a fast moving area, includes a variety of scientific disciplines: chemistry, pharmacology and physical chemistry, as well as dermatology biochemistry, physiology, microbiology, engineering, analytical chemistry, fragrance chemistry, color science, and psychology.

Rapid changes in the worldwide regulatory contents, and increasing demanding of consumers asking for multifunctional cosmetics having additional benefits, meet formulating chemists to develop products of high quality always more active and responding to the specific consumer needs.

This book by IV sections and 54 chapters, updates many information, from Chemistry to the Regulatory context of cosmetics, to give new ideas and force the cosmetic formulator to think differently about his products.

Welcome to the Industry: Terms Tools and Tips is the topic of **Section I** introducing by 6 chapters the solid knowledge the cosmetic formulator has to have for the right product development.

Beyond basic cosmetic science, formulators must be aware of how marketing decisions, cost constraints, manufacturing conditions, and aesthetics concerns, such as appearance and odour, can impact product development. Firstly learning from trade literature and peers, the cosmetic chemist identifies raw materials with the desired functionalities and combine these materials in the proper ratios to yield an acceptable finished product that performs as intended and remains stable learning. Substantiating the product performance claims and evaluating its real capability to moisture, for example, the skin, understanding the regulatory role the product has, thus to be perfectly known from the formulator.

Certain claims may cause a product to be considered a drug, even if the product is marketed as if it is a cosmetic. Thus, in EU market a fragrance marketed with certain *aromatherapy* claims, such as assertions that the scent will help the consumer sleep or quit smoking, meets the definition of a drug because of its intended use.

In conclusion, cosmetic scientists must be skilled in many areas related to product development including, formulation claims support, packaging, process engineering and regulatory issues. However, suppliers may assist formulators by fulfilling requests for raw material samples test data and various forms of technical support including new ideas and financial and business information. For all these reasons many successful new products have been developed as a result of a partnership between a cosmetic company who had an idea or concept and a vendor who had the technology equipment or raw materials that helped make the concept a reality.

Basic Cosmetic Science is discussed on **Section II** by 14 chapters.

Personal Care products are designed to satisfy the consumer needs. Thus, some of their ingredients perform specific physical functions, such as skin cleansing or hair conditioning. Others play more subjective roles in helping the product achieve consumer satisfaction, such as fragrance because of psychological effect it can have. Therefore, *aromascience* is born describing the temporary effects on emotions or physical performance delivered through the olfactory system. Some evidence suggests, in fact, that some fragrance directly affect human behaviour, such as promoting relaxation or reducing stress.

At this purpose, new type of cosmetic products are appearing on the market based on a new concept of the relationship existing between body and mind. Investigators of the Harvard Cutaneous Biology Research Center, showed the content point between Langerhans cells, the skin and nerve cells, confirming the mind and body are connected to one another in skin.

These findings explained by Ozawa and Quereleux clarify the existence of a bidirectional regulatory mechanism between the nervous system and the immune system in skin. Thus, scientists from Shisheido and L'Oreal were able to demonstrate that prolonged anxiety and tension promote the secretion of adrenocorticotrophic hormone (ACTH) from the anterior pituitary gland which promotes the secretion of cortisol, leading to a reduction of immunological functions of Langerhans cells and rough skin. This, in turn led to the "NICE" concept in which our Nervous, Immune, Cutaneous and Endocrine system all work together to internally activate our skin physiology via the secretion of *homeostasin*.

Products like this *mind-body* skin care that contains elements to improve the homeostasin secretion balance should stimulate the mind-body connection from the outside, augmented by fragrance that might have favourable effects on mind.

In this way "cosmetic products should affect the quality of life and our health, being a dynamic state of complete physical, mental, spiritual and social-wellbeing", according with the definition of World Health Organization.

For all these reasons cosmetic product does play an important role in human life having a great social value also. Therefore, clarification of the exact mechanisms of action cosmetic products have and the establishment of universal objective, reproducible and quantifiable testing methods are essential for the further advancement of research in Cosmetic Dermatology area.

Naturally, cosmetic chemists have to understand the world of knowledge necessary to formulate the right products for the skin and its annexes. Thus the biology of hair, the new directions on skin researches, are reported together with the surfactant area, necessary to make and understand the emulsions in the correct way, or the preservative and fragrance chemistry necessary to better formulate *clinically correct cosmetics*.

However, one of the essential qualities required of a successful cosmetic chemist is the ability to accurately and efficiently record data necessary to retrieve information and document ideas. Apparently insignificant changes in processing temperatures or order addition of raw materials can drastically alter the outcome of the final product.

This is why, what it is done in the lab, even a germ of a new idea, should be always written/recorded in a notebook. In this way is beginning **Section III** reporting *Product Development*: from Beaker to Bottle by 24 chapters.

Proper preparation is one of the secrets of producing successful personal care products, by using the

information contained within the lab formula. Once cosmetic chemist is familiar with a formula's ingredients, he has to review the manufacturing procedure, reviewing all the lab instructions before batching. The lab notebook and production procedure is important not only in reproducing the preparation, but also in situations involving potentially patentable technology.

In conclusion, preparing laboratory batches of personal care products is a significant part of a cosmetic chemist's job. Thus, when creating a new products, he/she should be aware of a host of issues, including chemical raw materials, packaging components, test methods, manufacturing concerns, sensory evaluation techniques, patents, regulatory issues and hazardous waste requirements, consumer expectations, and market trends. Moreover it is to underline the importance of fragrance chemistry in personal care knowledge of the structure of bases and the chemical nature of aroma chemicals allows intelligent conclusions to be drawn concerning the fate of fragrance materials in unfinished products. In reality, fragrance often is the most chemically complicated component of the formulation, and understanding its technical aspects is essential for the creation of an acceptable product. More often fragrance is, in fact, the key sensory attribute of the personal care products. However, all the aspects of formulating products for skin and hair care are reported and discussed in this Section, where emerging technologies of cosmetic science such as nanotechnologies are focused together with the efficacy studies necessary for all the cosmetic formulations to be sold.

Evaluating and testing raw materials and finished products are the topics reported in **Section IV** together with Regulatory Compliance and Claims Support. Therefore, types of tests with which the cosmetic formulator should be familiar to successfully develop, maintain and manufacture the products, are focused by other 10 chapters.

The cosmetic chemist needs to be aware of how such tests relate to both product development and to quality assurance of raw materials and finished products. And these tests fill into two general categories: *physicochemical tests*, which involve the measurement of some physical or chemical property of a chemical raw material or finished cosmetic product, and performance tests which are designed to measure how well the product functions in some capacity. In both cases, the objective is to better understand and predict the behaviour of the materials involved in order to ultimately produce a final product of high and consistent quality.

Moreover, it should be necessary to evaluate both *in vitro* and *in vivo*, in dermatological departments, the final product, and to control its efficacy in humans.

Finally, it must also comply with any relevant regulatory considerations.

In conclusion this interesting book reaches the aim to represent a key stone to help the cosmetic chemist in its every day work, and being full of new interesting ideas, it is helpful to marketing managers and to all scientists interested to Cosmetic Dermatology also.

Cosmetic Science is continuously evolving and the new innovative products seem capable to influence the quality of life by the recovered mind-body connection.

The nature of connection between mind and body only now is beginning to be discovered in terms of physics and chemistry by scientists expert in Cosmetic Dermatology.

Next step is to identify how these connections may be extensively measured and connected with the quality of life.

P. Morganti
Editor-in-Chief