

# JOURNAL OF COSMETIC SCIENCE

The Official Journal of the Society of Cosmetic Chemists

*Publishing technical papers on topics of  
interest to cosmetic scientists since 1947*



PUBLISHED BY



SOCIETY OF COSMETIC CHEMISTS

SERVING GREATER NORTH AMERICA SINCE 1945

Purchased for the exclusive use of nofirst nolast (unknown)  
From: SCC Media Library & Resource Center (library.scconline.org)

[WWW.SCCONLINE.ORG/JOURNAL](http://WWW.SCCONLINE.ORG/JOURNAL)



## ACCELERATING OUR SUSTAINABLE FUTURE

The 100% Bio-Based ECO Range is the widest range of 100% renewable surfactants on the market with over 50 different personal care ingredient codes. By using an alternative route to EO with bioethanol from biomass sources, it significantly increases the bio-based content of ethoxylated products and reduces reliance on fossil fuels.

This range of ingredients meets consumer demands for performance, while being 100% renewable and 100% bio-based. Moreover, the ingredients are manufactured with renewable energy and have a lower carbon footprint than petro-based options.

### Join us on this sustainability journey

Learn more about the 100% Bio-based ECO Range of surfactants.

Visit us at: [www.crodapersonalcare.com](http://www.crodapersonalcare.com)



- 100% renewable
- 100% bio-based<sup>1</sup>
- Vegan & Cruelty-Free Suitable<sup>2</sup>
- Low levels of 1,4-Dioxane
- Reduces reliance on fossil fuel feedstocks
- Manufactured with renewable energy
- Performance identical to petro-based options
- Lower carbon footprint than petro-based versions
- USDA Certified Biobased Product<sup>3</sup>
- RSPO Supply Chain Certified via Mass Balance<sup>4</sup>

(1) Calculated using USDA BioPreferred Method for determining bio-based content and validated, or being validated, by carbon 14 testing (ASTM D6886)

(2) May be suitable for vegan and/or cruelty-free claims. If you are interested in making a vegan and/or cruelty-free claim, please request our Vegan Suitability statement and/or Animal Testing statement for specifics on this product and compare to the certification(s) you are seeking to meet (3) USDA BioPreferred® is a registered trademark of the U.S. Department of Agriculture

(4) Products containing palm oil derivatives

North America [marketing-usa@croda.com](mailto:marketing-usa@croda.com)  
Europe, Middle East & Africa [pc-europe@croda.com](mailto:pc-europe@croda.com)

Latin America [marketinglatam@croda.com](mailto:marketinglatam@croda.com)  
Asia Pacific [pc-asia@croda.com](mailto:pc-asia@croda.com)



# Journal of Cosmetic Science

*The Official Journal of the Society of Cosmetic Chemists*

SOCIETY OF COSMETIC CHEMISTS

SERVING GREATER NORTH AMERICA SINCE 1945

**Editor-in-Chief:** **Paolo Giacomoni, PhD**, Consultant to the Skin Care Industry

**Senior Associate Editor:** **Trefor Evans, PhD**, TRI-Princeton | *Hair Expert*

**Associate Technical Editor:** **K.P. Ananthapadmanabhan, PhD**, College of Pharmacy,  
University of Cincinnati | *Skin Expert*



**President:** **Liz Streland**, Croda, Inc.

**Vice President:** **Michelle Hines, PhD**, Mary Kay, Inc.

**Vice President-Elect:** **Mark Chandler**, ACT Solutions Corporation

**Secretary:** **Yulia Park, PhD**, Amway Corporation

**Treasurer:** **Karen Chun**, Symrise, Inc.

**Executive Director/CEO:** **Erica L. O'Grady, CAE**, Society of Cosmetic Chemists HQ



© Copyright 2021 by the Society of Cosmetic Chemists. Permission is granted to readers and nonprofit libraries acting for them for fair use of the material contained in this Journal. Permission is further granted to quote from this Journal in scientific works with the customary acknowledgment of the source. Consent from EACH OF THE ORIGINAL AUTHORS along with notification to the Society of Cosmetic Chemists is required to reprint a figure, table or other excerpt. The republication, systematic or multiple reproduction of any material in this Journal (including abstracts) is permitted under written license from the Society of Cosmetic Chemists. The Society of Cosmetic Chemists may also require that permission must be obtained from EACH OF THE AUTHORS. Address inquiries to the Editor.

**SUBSCRIPTION:** JOURNAL OF COSMETIC SCIENCE, the Official Journal of the Society of Cosmetic Chemists, is published six times per year with January/February, March/April, May/June, July/August, September/October, November/December issues. Yearly subscription price is \$250.00 for 1-10 users, \$350 for 11-50 users, \$490 for 51-100 users and \$686 for 100+ users.

**JOURNAL OF COSMETIC SCIENCE**, the Official Journal of the Society of Cosmetic Chemists, is a registered trademark of the Society of Cosmetic Chemists.

**POSTMASTER, MEMBERS AND SUBSCRIBERS:** Send address changes to The Society of Cosmetic Chemists, 14 Wall Street, Suite 1620, New York, NY 10005.

**RESPONSIBILITY FOR STATEMENTS PUBLISHED:** The Society of Cosmetic Chemists, the Journal Advisory Group and the Board of Directors assume no

responsibility for statements or opinions advanced by contributors to this Journal.

Missing issues will not be supplied if claims are received more than 60 days after the date of the issue, or if loss was due to failure to give notice of change of address. The JCS cannot accept responsibility for foreign delivery when its records indicate shipment was made.

**EDITORS AND PUBLISHERS:** Abstracts or digests of articles not exceeding 400 words may be published, duly credited to the author and JOURNAL OF COSMETIC SCIENCE, the Official Journal of the Society of Cosmetic Chemists.

**AUTHORS:** When using illustrations or quotations taken from copyrighted publications, authors must get written permission from the copyright holder to reproduce the same.

**PAGE CHANGES:** The authors of a manuscript will no longer be assessed a page or color photograph charge for printed manuscripts. Any material set into type but ordered deleted from the publication at the page proof stage must also be paid for by the author. These changes will be invoiced to the senior author at the time of publication.

**MANUSCRIPTS:** Manuscripts should be prepared in accordance with "Information for Authors," which can be found at the end of this issue.

Periodicals postage paid at New York, New York and additional mailing offices.

Publication office: 14 Wall Street, Suite 1620, New York, NY 10005 (212) 668-1500, Fax: (212) 668-1504. Email: [journal@scconline.org](mailto:journal@scconline.org)

Purchased for the exclusive use of non-profit host (unknown)

From: SCC Media Library & Resource Center ([library.scconline.org](http://library.scconline.org))





formulating science &

# innovation

## Driving the science and business of cosmetics forward.

At the University of Cincinnati, our approach to cosmetic science is for inventors and explorers. For those ready to make an impact in one of the fastest growing and increasingly science-driven fields. Our innovative programs help prepare students today to gain knowledge that will help them develop as industry leaders for tomorrow.

ONLINE PROGRAM OPTIONS:

**Master of Science**  
in Cosmetic Science

**Graduate Certificate**  
in Cosmetic Science

LEARN MORE AT

**ONLINE.UC.EDU/PROGRAMS/PHARMACY/**

Purchased for the exclusive use of nfirst nolaast (unknown)

From: SCC Media Library & Resource Center (library.seconline.org)

University of  
**CINCINNATI**  
**ONLINE**



SOCIETY OF COSMETIC CHEMISTS  
SERVING GREATER NORTH AMERICA SINCE 1945

# Journal of Cosmetic Science

*The Official Journal of the Society of Cosmetic Chemists*

*Volume 72 No. 5 | September/October 2021*

## ORIGINAL ARTICLES

### **Influence of Menstrual Cycle on Aromatic Composition Behavior After Skin Application by Gas Chromatography / Mass Spectrometry**

Claudia S. C. P. Da Costa, Marcus T. Scotti, Fernanda D. Sarruf, Paulo R. H. Moreno, André R. Baby, Maria V. R. Velasco | pp. 499

### **Simplified Salt-Assisted Solvent Extraction for the Determination of Five Saponins in Toothpastes Using High Performance Liquid Chromatography with Ultraviolet Detector**

Miao Chen, Shixiong Zhou, Kunyun He, Ying Gao | pp. 511

### **Characterization of Bleached Hair: Vibrational Spectroscopy, Thermal Analysis, and Determination of Equivalent Damage Factor**

Timothy Gillece, Larry Senak, Roger L. McMullen | pp. 519

### **Terpene Conjugation: A Novel Approach for Topical Peptide Delivery**

Seyedeh Maryam Mortazavi, Farzad Kobarfard, Ali Manafi, Howard I. Maibach, Hamid Reza Moghimi | pp. 547

## REVIEW ARTICLE

### **A Comparative Evaluation of Cosmetic Legislations in India and the European Union**

Shraddha Srivastava, Vikesh Kumar Shukla, Sandeep Gill, Ankit Goyal | pp. 557



## SCC Career Center

Connecting Top Employers with  
Premier Professionals.

[www.careers.scconline.org](http://www.careers.scconline.org)

## JOB SEEKERS:

*Keep Your Career on the Move*

- **POST** a resume or anonymous career profile that leads employers to you
- **SEARCH** and apply to hundreds of new jobs on the spot by using robust filters
- **SET UP** efficient job alerts to deliver the latest jobs right to your inbox
- **ACCESS** career resources, job searching tips and tools

## EMPLOYERS:

*Find Your Next Great Hires*

- **PLACE** your job in front of our highly qualified members
- **SEARCH** our resume database of qualified candidates
- **MANAGE** jobs and applicant activity right on our site
- **LIMIT** applicants only to those who are qualified
- **FILL** your jobs more quickly with great talent

### Need Assistance?

If you need assistance or have feedback about this service call us at (860) 437-5700 or email customer service at [clientserv@yourmembership.com](mailto:clientserv@yourmembership.com).



**SOCIETY OF COSMETIC CHEMISTS**  
SERVING GREATER NORTH AMERICA SINCE 1945



*Accepted speakers shall receive one (1) complimentary daily access registration to the Annual Meeting for their use the day of their presentation. A full access registration upgrade for speakers is available at a discount if they wish to attend the entire meeting. Additional registrations may be purchased at the then-current rate.*

All scientists, academicians, policy makers and other stakeholders in the cosmetic and personal care community are invited to submit an abstract of original work, lab demonstration or case study for consideration as a podium lecturer.

**ABSTRACT SUBMISSION DEADLINE:**

**APRIL 4, 2022**

*We are seeking abstracts covering the following topics:*

|                       |                                 |
|-----------------------|---------------------------------|
| Claims / Regulations  | Indie Beauty                    |
| Diversity in Beauty   | Looking to the Future / Biotech |
| Fragrance and Sensory | Makeup & Sunscreen              |
| Functional Skincare   | Sustainability                  |
| Hair & Scalp          |                                 |

***For more information, visit the SCC website at [www.sconline.org/SCC76](http://www.sconline.org/SCC76)***

