

March 13, 2026

Originally Published in Japanese: December 19, 2025

**“Excellent Poster Award” Received at The Chemical Society of Japan (CSJ) Chugoku-Shikoku Branch Conference through Collaborative Research with Sanyo-Onoda City University
~Elucidation of the Mechanisms of Interaction at the Molecular Level between Keratin and Hair Repair Ingredient CMADK~**

Milbon Co., Ltd. (head office: Chuo-ku, Tokyo, President and CEO: Hidenori Sakashita), a manufacturer of salon-exclusive haircare products and cosmetics, has elucidated the mechanisms of interaction at the molecular level between keratin, the primary component of hair, and the hair repair ingredient CMADK (S-carboxymethyl alanyl disulfide keratin protein)*¹ through collaborative research with Masatoshi Saiki, Junior Associate Professor of Sanyo-Onoda City University. The results were presented at the 2025 Chemical Society of Japan Chugoku-Shikoku Branch Conference, Kagawa Conference and received an “Excellent Poster Award.”

This conference serves as a forum for presenting the latest research findings in the field of chemistry and fostering academic exchange. The “Excellent Poster Award” is given to poster presentations that are particularly outstanding. This year, 16 posters were selected from a total of 208 poster presentations.

[Award Overview]

Academic conference: 2025 Chemical Society of Japan Chugoku-Shikoku Branch Conference, Kagawa Conference

Title of presentation: Elucidation of Mechanisms of Interaction between Hair Keratin and Repair Components through Secondary Structure Evaluation and HPLC Quantitative Analysis

Presenters: Yuimi Miyata*, Hironori Kimura[†], Len Ito[†], Masatoshi Saiki*

* Saiki Laboratory, Graduate School of Engineering, Major in Applied Chemistry, Sanyo-Onoda City University

[†] Milbon Co., Ltd.

[Research Overview]

Milbon has developed CMADK as a hair repair ingredient that adheres strongly to hair and has applied it to products.

CMADK-related news releases to date

1. [Milbon Confirms that New Hair Repair Material S-Carboxymethyl Alanyl Disulfide Keratin Protein \(CMADK\) Binds Specifically to Hair \[News Release, June 7, 2013\]](#)
2. [Milbon Successfully Develops New Ingredient that Repairs Disruptions in the Microstructure Within Hair \[News Release, November 21, 2018\]](#)
3. [Milbon Develops New Keratin Raw Material that Approximates the Protein Structure of Hair \[News Release, October 27, 2022\]](#)
4. [Milbon Develops New Keratin Raw Material that Combines Adhesion to Hair and Moisturizing Properties \[News Release, November 5, 2024\]](#)

To date, Milbon has confirmed that CMADK has strong adhesion to hair and repair effects through empirical assessments such as tensile strength measurement and hair density measurement. However, the molecular-level mechanisms of action—which part of the keratin it binds to and how it does so—have not been fully elucidated.

In this research, we aimed to analyze the interaction between keratin and CMADK at the molecular level, elucidating the mechanisms using CD spectroscopy measurement^{*2} and HPLC quantitative analysis^{*3}.

[Future Vision]

Based on these results, we will advance the establishment of fundamental care technologies grounded in hair science and the development of higher-performance products.

«Terminology»

*1 CMADK (S-carboxymethyl alanyl disulfide keratin protein)

Also referred to as carboxymethyl disulfide keratin, this is a soluble keratin protein with a disulfide bond (two covalently-bonded sulfur atoms found in hair).

*2 CD (Circular Dichroism) spectroscopy measurement

A method for obtaining information on the secondary structure of biomolecules such as proteins.

*3 HPLC (High Performance Liquid Chromatography) quantitative analysis

An analytical technique for separating components within a mixture and measuring the quantity of a specific component with high precision.

■ For Inquiries relating to this news release:

MILBON Co.,Ltd.

Public Relations, Kyobashi Edogrand, 2-2-1 Kyobashi, Chuo-ku, Tokyo, Japan

Phone: +81-3-3517-3915

Fax: +81-3-3273-3211

■ For Inquiries relating to this news release:

Sanyo-Onoda City University Administrative Affairs Division Public Relations Section

TEL: +81-836-39-6605 FAX: +81-836-39-9249 Mail: kouhou@admin.socu.ac.jp