Panda Lecture: Longstanding 40-Year Ties with Tamkang University, Nobel Laureate Ryoji Noyori Reveals the Core Power of Chemistry in Creating Value

Campus focus

The Department of Chemistry held a prestigious Panda Lecture at 2:00 PM on March 20 at the Hsu Shou-Chlien International Conference Center, inviting 2001 Nobel Prize in Chemistry laureate and Nagoya University Distinguished Professor Ryoji Noyori to deliver a keynote speech titled "Chemistry is the Science of Value Creation." The event was simultaneously livestreamed, attracting over 310 attendees.

Vice President for Academic Affairs Hui-Huang Hsu welcomed Professor Noyori and introduced the origins of the Panda Lecture series, noting that the event was made possible through the International Peace Foundation's Taiwan Bridges Program. Dean of Science Hung-Chung Shueh introduced Professor Ryoji Noyori as a pioneer in asymmetric synthesis, noting that his development of chiral catalytic hydrogenation has had a profound impact on the pharmaceutical and fine-chemical industries. He also highlighted that Noyori was recently elected President of the Japan Academy, marking another significant honor in his distinguished academic career. A video was also screened at the venue, guiding attendees through the memorable moment of his Nobel Prize in Chemistry award.

Professor Ryoji Noyori made special mention of his deep friendship with Taiwan's 1986 Nobel Prize in Chemistry laureate Yuan-Tseh Lee, referring to him as both an elder brother and a mentor. He noted that their scientific journeys have been closely aligned and intertwined, and expressed profound admiration for Lee's contributions to academic excellence and social justice.

Opening with the question "Where do we come from?", Noyori explained how slight asymmetries between matter and antimatter since the Big Bang underpin the existence of the material world, manifesting in living systems as molecular chirality. Using the analogy of left and right hands, he

explained that molecules with mirror-image structures that cannot be superimposed may exhibit entirely different properties in pharmaceutical applications, one enantiomer may be therapeutic while the other could be toxic, highlighting the critical role of molecular asymmetry in chemistry, life sciences, and medicine.

Reflecting on his research journey, Professor Ryoji Noyori traced the concept he first proposed in the 1960s and, through decades of effort, developed a chiral metal catalytic system centered on BINAP ligands. This enabled highly selective asymmetric hydrogenation, converting difficult-to-separate racemic mixtures into single-enantiomer compounds. The technology has been widely applied in pharmaceuticals, fragrances, and fine chemicals, not only improving yields but also significantly reducing byproducts and waste, forming a key foundation for his Nobel Prize in Chemistry.

Professor Ryoji Noyori further invoked the concept of a “science map,” noting that modern science has evolved from single disciplines toward cross-disciplinary integration, with chemistry occupying a central position as a key bridge linking physics, biology, materials science, and environmental science. He emphasized that future research should rely on interdisciplinary collaboration to translate knowledge into public policy and industrial solutions, enabling chemistry to continue fulfilling its role as the “central science” in creating value.

Addressing global challenges, Noyori warned that population growth, industrial expansion, and resource overuse are placing a severe strain on the climate and ecosystems. In addressing greenhouse gas emissions, biodiversity loss, and pollution, he emphasized that chemistry should take a more proactive role in improving human life and environmental quality by providing high-efficiency, low-carbon solutions through molecular design and reaction engineering.

On the practical front, Professor Ryoji Noyori emphasized the importance of “green chemistry,” advocating reducing pollution and resource waste at the source through the use of renewable feedstocks, improved atom economy, reduced energy consumption, and the avoidance of toxic substances. He noted

that only through cross-national and interdisciplinary collaboration can the scientific community effectively address global challenges such as climate change, energy, and food security at the same time, scientific advancement must uphold ethical responsibility and social equity to enhance overall human well-being truly.

The lecture attracted faculty, students, and researchers from both within and outside the university, including Tamkang University Golden Eagle Club President Chien-Hsiang Lin and participants from various departments, as well as attendees from Academia Sinica, National Taiwan University, National Taiwan Normal University, and Tamkang Senior High School. The Q&A session was lively and engaging. Following the lecture, Professor Ryoji Noyori visited the Chung-Ling Branch of the Chueh-sheng Memorial Library, where he interacted closely with faculty and students and offered guidance on academic research.

Professor Ryoji Noyori and his wife visited President Huan-Chao Keh and Chairperson Flora Chia-I Chang at 10:30 AM and 11:00 AM on March 20, respectively, accompanied by Vice President for Academic Affairs Hui-Huang Hsu, Dean of Science Hung-Chung Shueh, and Chemistry Department Chair Chih-Hsin Chen. During the meetings, he specially presented a 1988 Tamkang University Introduction, demonstrating a nearly 40-year connection with the university, an unexpected gesture that impressed and astonished everyone present.

Professor Ryoji Noyori explained that he obtained the brochure during his first visit to Taipei in 1988. Although he did not have the opportunity to visit Tamkang University at the time, he carefully preserved it for nearly 40 years. He described it as a “red thread” connecting both sides and presented it as proof of this long-standing bond when invited to give a lecture at the university. The gesture pleasantly surprised President Keh and Chairperson Chang. In return, Chairperson Chang presented him with the university’s 2025 edition of the brochure, expressing appreciation for this enduring connection, showcasing Tamkang’s development and growth over the past four decades, and expressing hopes to further strengthen ties through future exchanges and collaboration.

President Keh and Chairperson Chang not only extended a warm welcome but also introduced the origins of the Panda Lecture to Professor Ryoji Noyori. They presented him with a Panda trophy and a commemorative vase featuring calligraphy by masters Chi-Mao Lee and Ben-Hang Chang, along with images of the Tamkang campus and the university anthem. Both sides exchanged views on topics including scientific research and industry–academia collaboration, demographic challenges, international mobility and cultural identity, academic legacy, and global cooperation. Professor Noyori shared that his academic achievements stem from pure curiosity-driven research although he did not initially focus heavily on industrial applications, he believes that the outcomes of fundamental research will ultimately have a profound impact on industry. As a leading figure in Japan's academic community, he emphasized that senior scientists have a responsibility to encourage younger generations while maintaining neutrality and integrity in academia, avoiding excessive involvement in political affairs. He also expressed hope that through international collaboration and resource sharing, greater opportunities can be created for the next generation of scientific development.

During his Taiwan visit, Professor Noyori also met with fellow Nobel laureate Yuan-Tseh Lee and held discussions with Minister of Education Ying-Yao Cheng, President of Academia Sinica Chien-Jen Chen, and former Academia Sinica President Chi-Huey Wong on fostering young scientific talent and advancing research outcomes.


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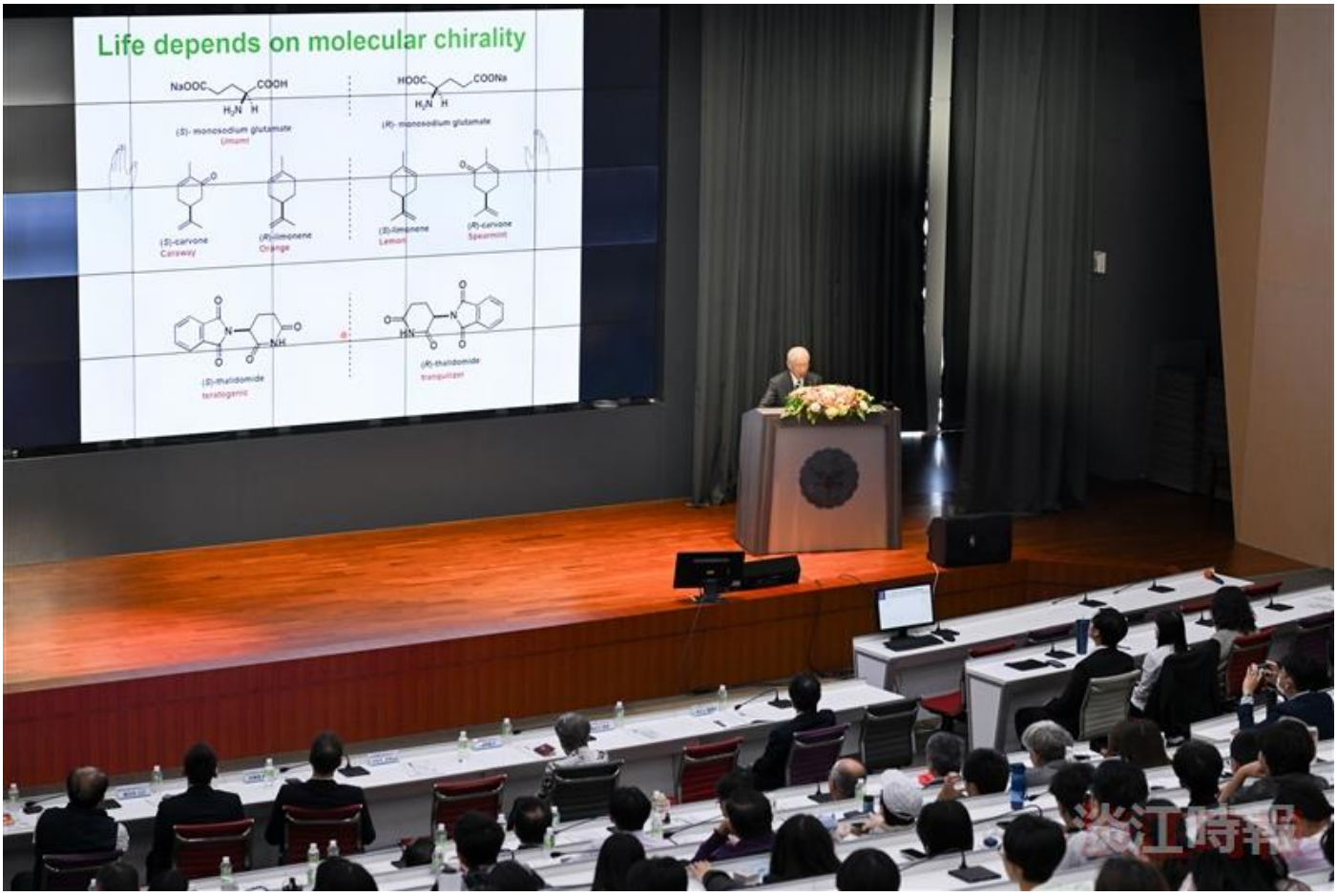
Life depends on molecular chirality
NaOOC
COOH
H2N H
(S)- monosodium glutamate
Umami
HOOC
COONa
H2N H
(R)- monosodium glutamate
(S)-carvone
Caraway
(R)-limonene
Orange
(S)-limonene
Lemon
(R)-carvone
Spearmint
(S)-thalidomide
teratogenic
(R)-thalidomide
tranquilizer


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Chemistry is the Science of Value Creation
Prof. Ryoji Noyori
2001 Nobel Laureate in Chemistry
14:10 – 16:00, March 20, 2026
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