Scientific Collaboration Between Mexico and Chile Boosts Technological Transfer in Applied Optics

Between November 18 and December 1, 2025, an important academic mission took place between two higher education institutions — one from Mexico (The Autonomous University of Nuevo Leon) and one from Chile (Universidad Catolica del Maule) — as part of the agreements established in their collaboration and technology transfer frameworks. This visit marked the beginning of new joint activities aimed at strengthening scientific research and innovation applied to industrial and energy-related challenges in both countries.

During this stay, professors **Daniel Toral** and **Ricardo Chapa**, from the Mexican institution, actively participated in the **on-site installation of two optical experiments** at the Centro de Innovacion en Ingeneria Aplicada **in Chile**, under the supervision of professor **Juan Lopez**, host of the project. These installations represent a concrete example of technological transfer, integrating knowledge developed in Mexico with the scientific infrastructure of Chile.

Profesores Ricardo, Daniel y Juan
(Área: Universidad Católica de Maule en Chile)

The first experiment aims to **improve the quality of production processes in the Chilean wine industry** through advanced optical techniques for real-time measurement and control of parameters. The second focuses on **harnessing solar energy for indoor lighting**, offering sustainable solutions to current energy crises.

Figure 1: Spectrometer and fiber Sensor

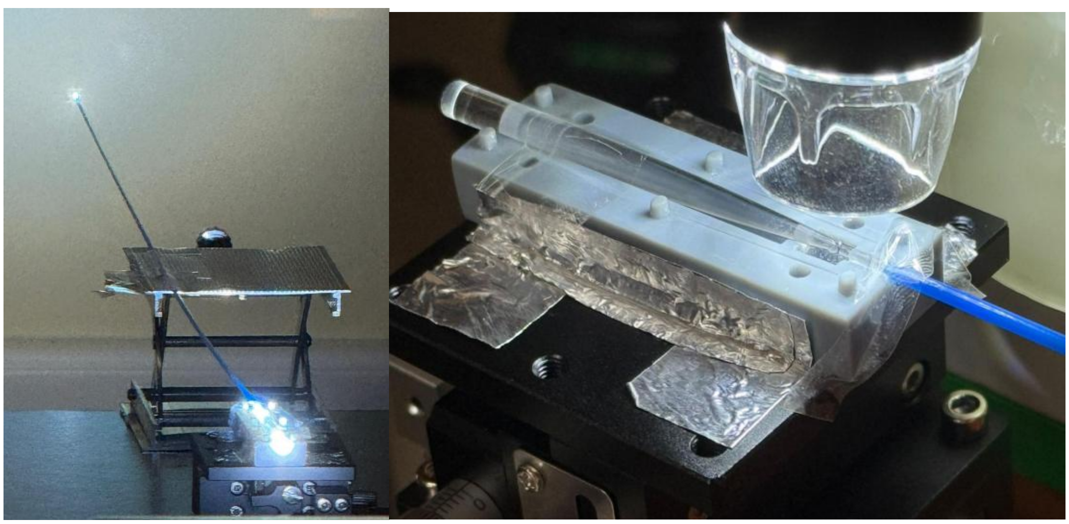

Figure 2: Optimized collection of light using a fiber optics

Through these projects initiated at the university in Chile, the goal is to serve as a **breakthrough toward refining the experiments**, whose ultimate aim is to **evolve from a prototype to a device that can be integrated into the value chain of Chile's local wine industry**. On the other hand, the lightning research work also seeks to **demonstrate the feasibility of solar lighting**, developing systems that are **more compact and cost-competitive** to achieve **broader adoption within society**.

Additionally, during their visit, the Mexican researchers **participated in a meeting with local authorities and governance representatives in Chile**, where they discussed opportunities for cooperation and the regional impact of these initiatives. This exchange demonstrated the mutual interest in **strengthening institutional ties and promoting the exchange of ideas, experiences, and scientific work** between the two universities.

Figure 3: Invited speaker Profrs Daniel and Ricardo

Professor **Romeo Selvas**, responsible for the Mexican projects, expressed his satisfaction with this first meeting, emphasizing its value as a **promising beginning for a stronger international collaboration**. He foresees that this encounter will lead to **more extensive joint participation and a deeper scientific partnership** in the future.

Both projects reinforce a **binational collaboration** that seeks not only to strengthen the scientific and innovative capacities of Mexico and Chile but also to **generate technological solutions with direct impact on industry and energy sustainability**. This visit represents a decisive step toward the continuity of joint research efforts and the development of future collaborative initiatives between the two institutions.

Congratulations to all the participants,

Write by Prof Selvas,
November 2025