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MMM01: The Legacy of Jean Perrin from A to Z

L'héritage de Jean Perrin de A à Z

Organizers: *Thomas Zemb (ICSM), Christiane Alba-Simionesco (LLB), Benoit Coasne (UGA), Marie Plazanet (LIPHY).*

Invited Speakers to be confirmed: Jean-François Dufrêche (ICSM), Emmanuelle Dubois, Anne-Laure Fameau, Fabienne Testard, Fabienne Gauffre, Luca Cipelletti, Fabrice Cousin, Sylvain Prévost, Dominik Horinek (Ratisbonne), Nicolas Papaiconomou, Véronique Peyre, Kevin Roger Werner Kunz.

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Content: 2026 marks the centennial of the miraculous year of physico-chemistry of colloids for four reasons:



Jean Perrin received the Nobel Prize in Physics for his experiment measuring the half-thickness of the cloud of colloids called "macroscopic atoms." This experiment confirmed Einstein's predictions on Brownian motion, provided chemistry with proof of the existence of atoms, and simultaneously the first measurement of Avogadro's number. It also showed that gravity adds to surface tensions, paving the way for the rationalization by the concept of Perrin's length, which allows quantifying ultracentrifugation.



Theodor Svedberg received the Nobel Prize in Chemistry in 2026 for demonstrating through ultracentrifugation, which he was tasked with setting up as a student in Uppsala, that proteins were polymers and not micelles of amino acids.



Richard Zsigmondy also received the Nobel Prize in Chemistry in 2025 for the idea of dark-field microscopy, which notably allowed Jean Perrin to time the number of colloids passing through the known volume field of the microscope, even if their individual size is below the microscope's resolution.

All were intrigued and their scientific questioning initiated from the experimental results of **Louis-Georges Gouy** (1854-1926), who made incomprehensible observations at the time on the static diffraction of light at large angles common to screen edges and colloidal solutions, and worked. Gouy thus inspired both Boltzmann, Einstein, Perrin, and Zsigmondy, who explicitly cite him.



The year 2026 is thus the wonderful year for the understanding of colloids as well as that of atoms, elementary objects for reactive chemistry beyond a molecule and for the physicist access to the statistical approach notably via Brownian motion, a quadruple centennial for the physico-chemistry of ultra-divided mesoscopic matter.