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University of Luxembourg
Inaugural Lecture

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Thursday, 10 December 2015

18.00

Salle Tavenas

102a, avenue Pasteur

L-2311 Luxembourg (Limpertsberg)



Faculty of Science,
Technology
and Communication

Prof. Dr. Jan Lagerwall

Contrasts drive self-assembly and beauty is born



How order spontaneously emerges in the most unexpected ways, from fundamental physics to smart materials to a wise science policy.

In physics, the spontaneous development of order without instructions from the outside world is referred to as self-assembly. Vital for life, it is highly useful in various processes and applications of modern technology and society, and it is central to all of Jan Lagerwall's research projects. Self-assembly is driven by contrasts, separating water-soluble from water-insoluble moieties, combining ions with opposite charges, or fitting together structures with complementary shapes or bond patterns.

Self-assembly can work very well also on the scale of technology and the application of scientific results in society, if a diverse set of creative players are allowed to interact in uncontrolled ways. By encouraging interdisciplinary contacts in a "laissez faire" style, the contrasts between scientists, artists, engineers and entrepreneurs can drive outcomes that may be truly revolutionary. This has happened many times before, preparing the ground for the high-tech society we live in today.

In this lecture Jan Lagerwall will introduce his main research activities, with emphasis on the ERC-funded project INTERACT, strongly interdisciplinary in character. He will also share his strategy for promoting innovation and for stimulating his team members to think and work creatively and collaboratively. Finally, drawing from his experiences in Sweden, Germany, South Korea and Luxembourg, as well as from some illustrative examples from the history of science and technology, he will discuss the context in which academic research is done, in terms of expectations, actual outcomes, restrictions, opportunities and temptations.

Prof. Dr. Jan Lagerwall was born in Sweden, where he got his education up to Ph.D., in physics and in materials science. After a career trajectory passing USA, Germany and South Korea, working in physics, chemistry and transdisciplinary departments, he came to Luxembourg as professor in physics in 2014. His group's research spans across many boundaries, being held together by a common focus on self-assembly in soft matter, in particular liquid crystals. While fundamental scientific problems are always in focus, concerning e.g. topological defects, the optics of soft photonic crystals or the balance between self-organisation and jamming in colloids, the group collaborates with scientists, engineers and artists, providing a complementary perspective and expertise that allows also applied tracks in diverse areas, e.g. wearable technology, soft robotics and secure authentication technology.

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Introduction by Prof. Dr. Paul Heuschling, Dean of the Faculty of Science, Technology and Communication. A reception will take place after the inaugural lecture.