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# The 102<sup>nd</sup> iCeMS SEMINAR

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**Tue 28 Feb 2012**  
**16:00-17:00**

## **Layer-by-Layer Films as New Engineered Biomaterial Coatings: Applications to Regenerative Medicine**

Lecturer: **Prof. Catherine Picart**

MINATEC, Grenoble Institute of Technology, and  
LMGP (Laboratoire des Matériaux et du Génie Physique), France

Venue: 2nd floor Seminar Room (#A207)  
iCeMS Complex 1, Kyoto University

Beside events triggered by chemical ligands, mechanical properties of model and natural gels have recently been demonstrated to play an important role on various cellular processes such as adhesion, proliferation and differentiation. Bioactive signals such as growth factors are also important to dictate cell fate. Only few model materials exist that allow a systematic variation of their stiffness and/or bioactivity. Polyacrylamide gels grafted with ECM proteins are probably the most widely used model gels for mechano-sensitivity studies. Within the past 15 years, a new type of highly versatile surface coating has emerged, which is made by the layer-by-layer assembly technique. This technique allows the variation of several parameters with a nanometre scale precision. In our group, we focus on the development of self-assembled films based on extra-cellular matrix polysaccharides and polypeptides as main components, such as hyaluronan and heparin. In this presentation, I will present our recent advances in the development of film with controlled mechanical properties and bioactivity. These films offer a unique opportunity to investigate cellular processes in well defined 2D micro-environments. They also open new avenues in the design of functional coatings for smart biomaterials and in the development of novel strategies in tissue engineering.

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**Hosted by:** iCeMS (Institute for Integrated Cell-Material Sciences), Kyoto University  
**Co-hosted by:** Center for Frontier Medicine, Global COE Program, Kyoto University

