Flame retardancy of polymers: state of the art and perspectives

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December 5th, 2017 : 15:00-17:00
Room B105, Department of Industrial Engineering
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How flame retardants can improve the fire behaviour of polymers?

Fire behaviour is a main concern for the use of polymeric materials. Nevertheless, their reaction to fire assessed through testing at different scales, varies strongly according to their chemical structure and the possible use of flame retardants. Most part of these compounds acts as additive components whereas other ones stem from modifications of the backbone of the macromolecular structure. More recently, the use of nanoparticles as components of flame retardant systems represents a significant breakthrough to increase the fire performance with limited effect on functional properties of polymeric materials.

This seminar aims to present the general aspects of polymer flammability, the mechanism of action of flame retardants with a special focus on new prospects about flame retardant systems involving nanoparticles.