Istituto di Chimica dei Composti Organometallici

ICCOM Firenze incontra ICCOM Pisa

Venerdì 12 Ottobre 2018
Alle ore 11:00

presso Aula 2 – Edificio F
Area della Ricerca CNR, Via Madonna del Piano 10 – Sesto F.no

La Dr.ssa Serena Coiai di ICCOM-Pisa terrà il seguente seminario:

"Post-polymerization modification by nitroxide radical coupling reaction"

Dr. Francesco Vizza
ICCOM-CNR

Abstract:

Design and preparation of functionalized polymeric materials bearing covalently linked functional moieties has drawn great interest in recent years. In particular, post-polymerization modification processes able to convert commodity plastics into products with new, desirable and tunable properties, thus extending their applications, are highly attractive. Among the post-polymerization modification strategies, the coupling reaction between nitroxides and carbon-centered radicals, also known as nitroxide radical coupling (NRC), is presented as an attractive, convenient and versatile post-polymerization modification method for both polyolefins and biodegradable aliphatic polyesters. This reaction provides excellent control of macroradical side reactions versus grafting of functional molecules thus limiting radical-induced crosslinking/branching and degradation and retaining structural properties of parent materials. A mechanistic understanding of the use of 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO) and its derivatives will be provided. Moreover, examples about the preparation of functional polymers using special designed nitroxides bearing functional moieties (i.e., chromophores, stabilizers, etc.) will be given.

Biographic sketch:

Serena Coiai received her Master degree in Chemistry from the University of Pisa in 2001 and her Ph.D in Macromolecular Chemistry from Scuola Normale Superiore of Pisa in 2005 under the supervision of Prof. Francesco Ciardelli. In 2004 she was a visiting PhD student at the University of Manchester (UK). She joined CNR ICCOM SS Pisa as a researcher in 2011.

Her main research activity is in the field of macromolecular chemistry and material science. In particular, she is interested in the preparation and characterization of functionalized polymers (from oil and bio-based sources) by post-polymerization modification reactions, inorganic/organic host-guest systems with targeted functional properties, and basic research into polymer nanocomposite including design, synthesis and characterization.

She is co-author of 54 peer reviewed papers, 4 patents, 7 book chapters and more than 100 contributions at national and international conferences. She has been scientific responsible of the CNR research unit in the project FIRB Futuro in Ricerca 2010 GREENER-Prot. RBFR10DCS7 and team member of the CNR Research Unit in FP7 Project NMP.2011.LARGE.5 “DIBBIOPACK”, FP6 STREP Project NMP3-CT-2005-516972 “NANOHYBRID” and several national projects. She has worked in collaboration with international companies like PIRELLI Labs that patented part of her PhD research findings, DOW Chemical, BASF Construction, and ARKEMA-ATOFINA.