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### **Synthesis and thermal study of multi arms nano block copolymers via combination of ring opening polymerization and thio-click chemistry**

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Many new well defined narrow molecular weight distribution polymers with multi-arms have been prepared by the Ring Opening Polymerization, using lactide with the compound resulted from the reaction of mercaptoethanol with poly octavinyl silsesquioxanes (POSS) by the thio-click chemistry. They were characterized by infrared spectroscopy (FT-IR), Nuclear Magnetic Resonance (<sup>1</sup>HNMR and <sup>13</sup>CNMR) and by Gel Permeation Chromatography (GPC), where all these analyses have proved the correctness of the expected structure and compositions. On the other hand images obtained from Scanning Electronic Microscopy (SEM) revealed the existence of nano-structures in the prepared copolymers due to the presence of the lactide array to give nanofiber within final compositions prepared.

Thermal properties of prepared copolymers have been also studied. The results have demonstrated an increasing in their thermal stability with increasing chain length of lactide compound; also found that copolymers containing POSS in their composition gave higher thermal stability than those copolymers having no POSS.

#### **Biography**

Hadi Al-Lami is Professor of Polymer and Ceramic Chemistry, he is working as a Head of Chemical, Biological, Radiological Safety and Security Department at College of Science/University of Basra. In addition to that, he teaches courses in advance polymer chemistry, inorganic polymers, and biomaterial chemistry. He has published more than 80 peer-reviewed papers and 10 Iraqi Patents, and two books.

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