Tentative Outline

Special Issue for Current Organic Chemistry

Guest Editor(s): Dr. Jin Han

TITLE: Oligomeric Silsesquioxanes Chemistry

Aims & Scope:

This thematic issue will update the knowledge of Oligomeric Silsesquioxanes Chemistry to present the state-of-the-art of this special field.
Since the pioneer works on polyhedral oligomeric silsesquioxanes (POSS) were done by Frank Feher and Richard Laine in 1990s accompanied with the rise of nanoscience, Oligomeric Silsesquioxanes Chemistry has experienced a renaissance. Enormous progress has been made over the past two decades. Till now, the family of oligomeric silsesquioxanes is composed of POSS, metallic POSS, POSS-based amphiphiles, cyclic oligomeric silsesquioxanes (COSS), and double-decker silsesquioxanes (DDSQ). POSS have been well studied and used in the fields of nanoscience, surface science, nanostructured materials, and biomaterials, and these researches have been reviewed in a number of articles, but an updated review article is still needed to comprehensively summarize the methods of synthesis and useful functionalization. Researches on metallic POSS as useful catalysts have been reviewed nine years ago, but recent progress on synthesis and use in polymer materials has not been reviewed. POSS amphiphiles including oligomers of POSS, Janus POSS, and POSS-polymer tadpole-like amphiphiles, have been elaborated and used for the manufacturing of self-assembling nanosystems and as nanosized fillers, but there is not any review articles covering these delicate research works. COSS and DDSQ are newly emerged members. COSS are cyclic ones whose cycles are composed of 4, 6, 8, 10, or 12 consecutive Si-O bonds. The COSS chemistry was carried forward mainly by O.I. Shchegolikhina and her coworkers. Research on symmetric difunctional DDSQ were initiated with the publishing of a United States patent 20040249103A1 in 2004. The synthesis, useful functionalization, and applications of COSS and DDSQ have not yet been summarized so far. Accordingly, this special issue will summarize, comment and highlight the advancements of Oligomeric Silsesquioxanes Chemistry, and prospect the possible new directions and areas.

Key words: POSS, metallic POSS, POSS-based amphiphiles, COSS, DDSQ, synthesis, functionalization, and applications

Subtopics:

- Synthesis and Functionalization of Polyhedral Oligomeric Silsesquioxanes
- Recent Progress on Metallic Polyhedral Oligomeric Silsesquioxane Chemistry: Synthesis and the Use in Catalysts and Advanced Polymer Materials
- POSS-based Amphiphiles: Synthesis and Use in Self-assembling Nanosystems and Nanomaterials
- Current Chemistry of Cyclic Oligomeric Silsesquioxanes
- The Application of Double-decker Silsesquioxanes in High Performance Polymer Materials

Approximate Schedule:

- Manuscript Submission Deadline: 05/31/2015
- Peer Review Due: 06/30/2015
- Revision Due: 07/31/2015
- Notification of Acceptance by the Guest Editor: 08/15/2015
- Final Manuscript Due: 09/30/2015