Editor-in-Chief's Notes

The current edition of Polyolefins Journal (POJ) you have in your hands is the special edition dedicated to a selected collection of articles prepared from lectures presented in the polyolefin session of the 11th International Seminar on Polymer Science and Technology (ISPST2014) that took place in Tehran, Iran last October. The ISPST is a biennial event organized by different Iranian universities and research institutions since 1986. The conference's aim has been to bring national and international front liner, academicians, and business executives, to present and discuss the latest achievements in polymer science and technology. At the initiative of colleagues from Iran Polymer and Petrochemical Institute, IPPI, the host of the ISPST 2014 conference, for the first time, an entire session was devoted to a wide range of topics concerning the polyolefin research and development.

In this edition of the POJ, we are pleased to provide you with articles extracted from the lectures presented by an international group of prominent scientists, in the polyolefin session of the conference, on a variety of subjects related to polyolefin research, development & technology, in particular metallocene and Ziegler- Natta based olefin polymerization catalysis.

On metallocene catalysis you will find two review articles submitted by outstanding scientists from Germany. First I would like to introduce the article from Professor Walter Kaminsky, affiliated with university of Hamburg, Germany. Professor Kaminsky kindly accepted to transform his plenary lecture titled "Discovery and development of metallocene based polyolefins with special properties" into a written review article for Polyolefins Journal. In its article form, the presentation is now accessible to a much broader public and those who have not been able to participate at the conference. The reading of this article is highly recommended especially to those younger scientists who have entered the field of metallocene olefin polymerization catalysis recently. The review offers a brief but thorough glimpse into the last 40 years of development in the field of metallocene/single site catalysis, their divers' polymeric products, and particularly their potential for producing new materials such as copolymers made of polar co-monomers with ethylene and propylene. Professor Kaminsky's pioneering research especially his joint development of Methylaluminoxane, MAO, with professor Sinn, ushered in a new era of single site catalysis in the field of olefin polymerization.

The second article on metallocene is written by another author from Germany, Professor emeritus Helmut G. Alt, from university of Bayreuth, Germany, who likewise accepted to submit his invited lecture on "Intelligent catalysts for ethylene oligomerization and polymerization"as an article in this issue of the Polyolefins Journal. In this article he describes several interesting metallocene based catalyst systems with unique properties including catalyst systems that are devoid of any heterogenization agents. The idea behind these "self-supporting" or self-immobilization catalysts is that the homogeneous catalyst systems could be devised in such a way that they would produce their own support during the initial stages of the polymerization. It proposes a possible way to eliminate the time consuming and cost intensive heterogenization step, currently essential for industrial application of metallocene catalyst to prevent reactor wall fouling. Professor Alt has more than 30 years of academic and industrial experience in the field of organometallic chemistry and metallocene catalysis.

The last article on single site catalysis based on the presentation given by professor Incoronata Tritto from Milan's instituto per lo Studio delle Macromolecole (ISMAC), Italy titled:"Cyclo-olefin polymerization with transition metal catalysts" was not received on time for the publication in this issue, however, we expect it to be ready for publication in the next issue of POJ.

In this edition, you will find two articles on Ziegler-Natta catalysis covering synthetic and mechanistic aspects of these "ancient" but commercially very important, market dominating catalyst systems. The first ZN based, basic research article is authored by Professor Minoru Terano from Japan Institute of Science and Technology, JAIST,

and is based on his invited lecture at the conference on "Active site nature of magnesium dichloride-supported titanocene catalysts in olefin polymerization". In this article professor Ternao describes a "dual site" heterogeneous catalysts system that he has prepared by combining a conventional Ziegler-Natta catalyst with a $MgCl_2$-supported titanocene-dichloride catalyst and investigates the influence of the ligand structure of titanocene precursors on the nature of active sites in ethylene and propylene homopolymerization, as well as ethylene/1-hexene copolymerization. The polymer analyses results seem to indicate that the Ziegler-Natta-type active sites are producing poorly isotactic polypropylene and less branched polyethylene, whereas the metallocene-type active sites produce atactic polypropylene and exhibit much higher incorporation efficiency for 1-hexene. His findings concerning the impact of trialkylaluminum and the nature of the olefin on the polymerization/copolymerization of these types of bi-component catalyst systems provide some insights about the behavioral nature of the active sites of each component and an eventual synergistic interaction between the components. We were expecting another article on ZN catalysts, authored by our second lecturer from JAIST, Professor Toshiiaki Taniike on "First-principle molecular design of donors in Ziegler–Natta olefin polymerization". However, this paper was not ready for the publication in this Issue of POJ.

The second article on ZN catalysts is based on invited lecture of Professor Mikhail Matsko from Boreskov Institute of Catalysis, Novosibirsk, Russian Federation on "Kinetics of ethylene polymerization over titanium–magnesium catalysts: the reasons for the observed second order of polymerization rate with respect to ethylene". In this article Professor Matsko reports the preparation of several modified versions of modern highly active titanium–magnesium catalysts $TiCl_4/MgCl_2$ and investigates the effect of ethylene concentration on their polymerization rate. He observes that the order of polymerization rate, for his modified catalysts, increases with ethylene pressures and the type of trialkylauminum employed as cocatalyst. The author attributes the observed polymerization rates order to the effect of ethylene concentration on the number of active sites and proposes a reaction scheme to explain the nonlinear dependence of the polymerization rate on monomer concentration.

Finally, you will find two articles related to polyethylene polymer properties that were also presented by two of our invited lecturers at the conference. The first article is authored by one of our invited lecturers from Italy, Professor Gaetano Guerra from Dipartimento di Chimica e Biologia e Unità INSTM, Università degli Studi di Salerno: titled "High porosity polyethylene aerogels". It describes the preparation of Monolithic aerogels of high molecular weight polyethylene ($M_w = 3\times10^6$ - 6×10^6 g/mol) via solvent extraction with supercritical carbon dioxide from thermo-reversible gels prepared in decalin. These low density and highly porous aerogels present an apparent porosity up to 90%. As one of their potential applications, Professor Guerra's group has evaluated the oil-sorption performance of these polyethylene aerogels in order to assess a possible use of these materials for oil spillage recovery. The results show that aerogel macropores allow a very fast sorption kinetics where an amazing 100% oil weight uptake is obtained in less than 1 minute.

The second article in this area was submitted by Dr. Mehrdad Seifali Abbas-Abadi from Kermanshah University of Technology, Chemical Engineering, Energy department, Iran titled "Estimation of pyrolysis product of LDPE degradation using different process parameters in a stirred reactor" describing the pyrolysis of low density polyethylene (LDPE) by equilibrium fluid catalytic cracking (FCC) in a stirred bed reactor. In this work the author investigates the effect of several process parameters such as degradation temperature, catalyst/polymer ratio, nature of carrier gas, residence time and agitator speed on the condensate yield (liquid, gas and coke) and product composition. The results show that higher temperature and more catalyst amount enhance LDPE cracking while that pyrolysis at the temperature of 450°C, FCC/polymer: 10%(w/w), under H_2 atmosphere and 50 rpm agitator speed appeared to be more economically favorable in terms of cost efficient operation and liquid production.

I realize that this is an unusually long editorial note; however, I wish to remind the reader that it also provides an implicit account on the proceedings of the conference's polyolefin session the success of which eventually became this special edition of Polyolefins Journal. Thus this edition of POJ is derived from the very hard work of many people who were simultaneously involved in organization of ISPST 2014. Therefore, as editor-in-chief and poly-

olefin session chair I would like take this opportunity to express my appreciation to the organizing committee and those organizations and individuals who supported the conference.

My special thanks and gratitude goes to the invited speakers/authors who have accepted the invitation to participate at the conference and contribute by presenting their recent results at the conference and transforming their lectures into articles for POJ. I also would like to thank all the reviewers for their valuable time, dedication and comments to ensure that the published papers reach Journal's international standard. We are deeply committed to its high quality and timely publication. Please inform us promptly, should you find any inaccuracy or error in the texts. The journal is open to criticism and your comments and/or suggestions will be quickly evaluated by our staff.

Finally, I would like to thank as always, the editorial staff members, for their unconditional commitment to the publication of this special edition of Polyolefins Journal and their voluntary help they provided for the accomplished organization of the ISPST 2014. We are particularly indebted to Ms. Houri Mivehchi, the linguistic editor of the journal. Her tireless reading and correcting of each and every article that was published in the past issues of the journal secured grammatically correct and typographically flawless English of the articles' texts.

Editor-in-Chief
Polyolefins Journal
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