蹇锡高

报告人简介：

蹇锡高，男，1946 年 1 月出生，中国工程院院士，有机高分子材料专家，大连理工大学教授，高分子材料研究所所长，辽宁省高性能树脂工程技术研究中心主任。1969 年毕业于大连理工大学高分子化工专业，1988.2-1990.12 在加拿大 McGill 大学高分子化学系访学，1994 年被评为国家级有突出贡献的中青年专家。兼任《中国材料进展》副理事长、中国塑料加工工业协会专家委员会委员、中国新材料技术协会名誉会长等职。长期从事高分子材料合成、改性及其加工应用新技术研究。在高性能工程塑料、高性能树脂基复合材料、耐高温特种绝缘材料、涂料、耐高温高效功能膜等领域做出了重大创造性成就和贡献。研制成功结构全新的系列新型杂环高性能工程塑料，既耐高温又可溶解，解决了传统高聚物不能兼具耐高温和可溶解的技术难题，综合性能优异，成本低，属国际首创、原始创新，处于国际领先水平，已广泛应用于航空航天、核能、电子电气、石油化工、精密机械、环保等领域。获 2003 年度国家技术发明二等奖和 2011 年国家技术发明二等奖在内的 10 余项省部级以上科技奖励。获 20 余项发明专利，2 项专利被评为世界华人重大科技成果， 12 项技术已产业化。获 2015 世界知识产权组织和中国知识产权局联合颁发的中国发明专利金奖、获 2016 年日内瓦国际发明展特别金奖。发表 SCI 论文近 300 篇，培养博士 80 名、博士后和访问学者 7 名。

XiGao Jian

Profile of the Author:

Xigao Jian was born in January 1946, and now he is an academician of the Chinese Academy of Engineering, he works in Dalian University of Technology as a professor, as well as the director of the Institute of Polymer Materials in Liaoning. He graduated from the major of polymer chemistry of Dalian University of Technology in 1969, and stayed in McGill University in Canada from February 1988 to December 1990 as a visiting scholar. He is also vice chairman of China Materials Progress, member of China Plastics Processing Industry Association Committee and honorary president of China New Material Technology Association. He has long been engaged in the research of polymer materials synthesis, modification and new technology of processing and application. Great creative achievements and contributions have been made in the fields of high performance engineering plastics, high performance resin based composites, high temperature special insulating materials, coatings and high temperature and high efficiency functional membranes. More than 10 provincial and ministerial level scientific and technological awards have been awarded, including two Second Class of the National Technological Invention in 2003 and 2011, respectively. More than 20 invention patents have been authorized, 2 patents have been awarded the world's major Chinese scientific and technological achievements, and 12 technologies have been commercialization. One of the patents was awarded the gold medal of China invention patents jointly awarded by the 2015 World Intellectual Property Organization and the Intellectual Property Office of China, as well as the special gold medal of the 2016 Geneva International Invention Exhibition. Nearly 300 papers have been published, 80 doctors, 7 postdoctoral students and visiting scholars have been trained.

高性能生物基聚合物：可与石油基聚合物相媲美的研究初探

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摘要：生物基高分子材料由于其绿色环保的特点而受到越来越多研究者的关注，同时其可以替代石油基高分子材料，从而缓解人类目前面临的能源危机和环境污染等困境。目前，生物基高分子材料发展的挑战之一就是使其具有可以和现有材料相媲美甚至更优的性能。因此，设计及合成能够满足生物基高分子材料高性能化和功能化要求的生物基单体，是推广生物基高分子材料应用范围并提升其对石油基高分子材料竞争优势的关键问题。本工作中，通过引入生物基芳香杂环单体，分别制备得到了耐高温可溶解的聚芳醚酮树脂和具有优异热稳定性、力学性能且具有本征阻燃的环氧树脂。上述生物基高分子材料在某些性能上可以和石油基的相媲美甚至更优。本研究为设计生物基芳香杂环化合物提供了一种新策略，对制备高性能的生物基高分子材料并推广其应用具有重要的意义。

High Performance Bio-based Polymers: Several Cases which are Competitive with Petroleum-based Counterpart

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Abstract: Bio-based polymer is a widely available alternative to petroleum-based counterpart, and has attracted more and more attention as its green environmental characteristics, thus alleviating the difficulties of energy crisis and environmental pollution that human beings are facing at present. Now, one of the challenges in the development of bio-based polymers is to make them comparable to or even better than present polymers. Therefore, the design and synthesis of bio-based monomers, which can meet the requirements of high performance and functionalization of bio-based

polymers, is the key problem to promote the application of bio-based polymers and improve the competitive advantage of petroleum-based counterpart. In this work, a high temperature soluble polyaryl ether ketone resin and epoxy resin with excellent thermal stability, mechanical properties and intrinsic flame retardancy were prepared by introducing aromatic heterocyclic monomers. The as-prepared bio-based polymers can be comparable to petroleum-based counterpart or even better in some properties. This study provides a new strategy for the design of bio-based aromatic heterocyclic compounds, which is of great significance for the preparation of high performance bio-based polymers and the promotion of its application.