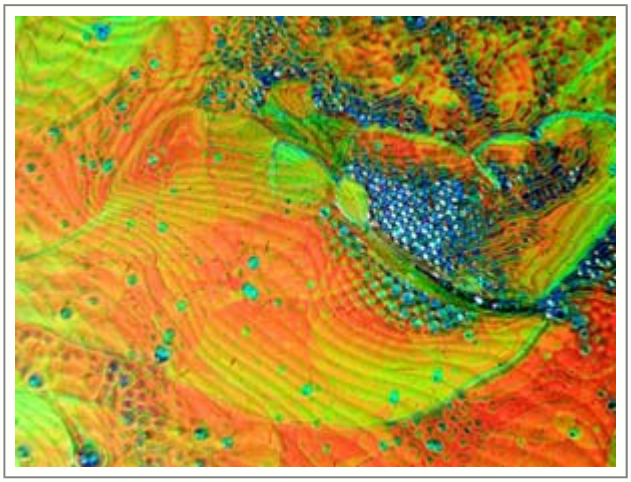
Roman Research Group

Biobased Advanced Materials

home



Welcome to the Biobased Advanced Materials Laboratory at Virginia Tech!

Our lab conducts basic and applied research on the utilization of polymers from renewable resources in the development of novel and advanced materials. Current research projects focus on potential applications of plant-derived nanoparticles in medicine, functional foods, and smart packaging.

VirginiaTech

Biobased Industrial Products

Projects leading to products made from renewable resources.

Go to Research Project Index for all Research Project Categories.

Life Cycle Models of Biobased Product Systems

Over the next century, a much larger fraction of chemicals, materials and fuels will be produced from plant raw materials. These biobased industrial products offer the potential for a much more sustainable economy based on environmentally-superior products. In order to realize the full economic and environmental benefits of biobased products, we must carefully analyze and improve their life cycle performance. We are currently involved in life cycle studies involving "refining" of corn, soybeans and forage crops (alfalfa and switchgrass) to fuel ethanol and other products. Our goal is to identify portions of the overall agricultural production, biorefining and product use systems that have the greatest impact on environmental and economic performance so that these areas can be targeted for additional research and improvement.

Investigators (PI is linked): Bruce E. Dale
Categories: Biotechnology, Biobased Industrial Products, Sustainable Economy, Environmental Research, Energy Production

Utilization of Renewable Resources

Eventually more fuels, chemicals and materials will be produced from renewable plant materials. Our current work is focused on pretreatments to increase the conversion of lignocellulose to fermentable sugars. We collaborate with others on the development of microorganisms and engineering strategies to ferment complex mixtures of these sugars. A new project is to genetically engineer plants to express the cellulase (cellulose-hydrolyzing) enzymes in plant tissue and then to develop processing strategies so that these enzymes can retain their activity until they are released in the biorefinery. We are also working to develop optimal mixtures of hydrolytic enzymes to convert the complex carbohydrates in biomass to fermentable sugars.

Investigators (PI is linked): Bruce E. Dale
Categories: Energy Production, Biotechnology, Biobased Industrial Products, Sustainable Economy

Property Measurement and Prediction for Bio-derived Chemicals

Bio-derived chemicals and fuels typically have a significant oxygen content. Predictive models developed for petrochemicals often have difficulty accurately predicting properties. We are actively support collaborative efforts by providing estimations and measurements, including the use of molecular simulations.

Investigators (PI is linked): Carl T. Lira
Categories: Energy Production, Biobased Industrial Products, Sustainable Economy

Hydrogenolysis of Carbohydrate Feedstocks

Carbohydrate feedstocks such as glucose or xylose can be hydrogenated to sugar alcohols and further cracked to value-added polyols such as ethylene glycol, propylene glycol, and glycerol. Catalysts, solvents, and reaction conditions play a key role in product distribution. Modeling of three phase reactors for polyol hydrogenolysis is a key focus of the project.

Investigators (PI is linked): Dennis J Miller
Categories: Biobased Industrial Products, Sustainable Economy

Aqueous Phase Hydrogenation of Organic Acids

Organic acids constitute an important class of feed materials for renewable resource-based chemicals production. Hydrogenation over supported metal catalysts in aqueous solutions produces the corresponding alcohols that have important industrial uses. Substrates investigated include lactic, succinic, propanoi, and various amino acids; the corresponding alcohols can retain the stereochemistry found in the parent acid.

Investigators (PI is linked): Dennis J Miller
Categories: Biobased Industrial Products, Sustainable Economy

Advanced Biofuel Blends as Petroleum Diesel Replacements

The development of advanced biofuels as petroleum diesel replacements is carried out in a multidisciplinary project. The advanced fuels are renewable and avoid the limitations in purity, cold flow properties, and oxidative instability that challenge methyl ester based biodiesel. The advanced fuels promise cleaner combustion and a broader base of renewable resources as feedstocks than current biofuels. Collaboration with engine researchers will lead to optimum fuel compositions and engine performance.

Investigators (PI is linked): Dennis J Miller
Categories: Biobased Industrial Products

Reactive Separations

Formation of chemical products from renewable resource-based feedstocks often results in a complex product mixture or dilute product streams. Novel separation and recovery schemes involving reactive separations reduce costs and enhance product purities. Systems under investigation include organic acid esters, polyols recovery, and acetal formation.

Investigators (PI is linked): Dennis J Miller , Carl T. Lira
Categories: Separation Science, Biobased Industrial Products, Sustainable Economy

Distilled Beverage Technology for Value Added Agricultural Products

The production of distilled beverages is an old industry that is currently experiencing a rebirth with the emergence of smaller artisan distillers in the US. The current research is aimed at ensuring product quality and assisting artisan distillers in establishing new business opportunitites. Work includes fermentation, distillation, and product development. The overall aim is the further development of an industry that provides value added opportunities for agriculture.

Investigators (PI is linked): Kris Arvid Berglund
http://www.artisandistilling.org *Categories:* Biobased Industrial Products

Fractionation of Lignocellulosic Biomass Utilizing Alkaline Pretreatments

Hemicellulose and lignin biopolymers from alkaline pretreatment liquors have unique properties that allow for separations for the purposes of hydrolyzate detoxification, alkali recovery, or recovery of solubilized biopolymers. This goal of this project is to develop an effective integrated processing strategy involving alkaline lignocellulose fractionation. For

this, a number of factors need to be considered in tandem which include understanding how changes in the alkaline pretreatment affect the properties of the biopolymers solubilized, how these properties affect the potential for recovery and separation, how the properties of the recovered component affects its capacity for use as a feedstock in other processes, and how the overall process is positioned in terms of yields, efficiency, and economics.

Investigators (PI is linked): David Hodge
http://www.chems.msu.edu/groups/hodge/ *Categories:* Separation Science, Energy Production, Biobased Industrial Products, Sustainable Economy

Catalytic transformation of biorenewables to petrochemicals

An important global challenge is the need to eventually replace finite fossil fuels with viable renewable resources. Currently, there are many significant initiatives on converting biomass to alternative fuels, but much less activity on using renewables for petrochemicals production. There is much knowledge on the transformation of crude oil to fuels and chemical feedstocks. However, due to significant differences between crude oil and biomass, these well-tested transformation pathways are not suitable for biomass conversion. In this project, we are developing generic methods for synthesizing catalytic nanoparticles (NPs) and surface modification to attach molecular catalysts (MCs), developing protocols for physical and/or chemical immobilization of catalytic NPs and NP-MC complexes in microfluidic channels, and assessing and optimizing catalytic NPs in both classical and microfluidic reactors. We will use the conversion of lactic acid to glycerol as the model reaction. Fatty acids from plant oils represent another important class of abundant biorenewables. To convert these to petrochemicals, we will anchor molecular catalysts to catalytic bimetallic nanoparticles to obtain NP-MC hybrid (NMH), and assess NMH catalyst effectiveness in microreactors using the hydrogenation of selected fatty acids to petrochemicals as model reactions. This is a collaborative project with Professor Obare (Department of Chemistry at UNCC; adjunct in CHEMS).

Investigators (PI is linked): Robert Y. Ofoli
Categories: Nanomaterials, Colloid and Interface Science, Biotechnology, Biobased Industrial Products, Sustainable Economy

Alkaline and Oxidative Pretreatments of Lignocellulose

The focus of this work is to investigate novel approaches for delignification and depolymerization of lignocellulose carbohydrates by alkaline oxygen pretreatments which, in contrast to acid pretreatments, specifically target delignification. The use of alkaline-oxidative conditions as a pretreatment presents unique opportunities for co-products and separations as well as challenges from a process integration viewpoint and is an additional feature of this research project.

Investigators (PI is linked): David Hodge
http://www.chems.msu.edu/groups/hodge/ *Categories:* Biomaterials, Energy Production, Biobased Industrial Products, Sustainable Economy

About Sun Grant

News and Events

BioWeb

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Links

Sun Grant Initiative

UT Bioenergy Programs

The Southeastern Regional Sun Grant Center
2506 Jacob Drive
Knoxville, TN 37996-4570
Phone: (865) 946-1124
Fax: (865) 946-1109
Email: sungrant@tennessee.edu

Renewable, Biobased Energy and Products....

The SunGrant Initiative is a concept to solve America's energy needs and revitalize rural communities with land-grant university research, education, and extension programs on renewable energy and biobased, non-food industries.

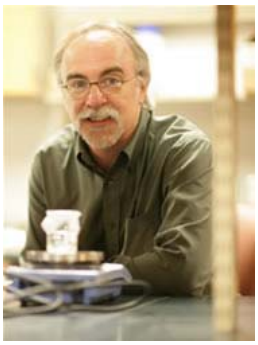
The Initiative involves creating university-based research, extension, and educational programs for biobased energy technologies. The University of Tennessee Agricultural Experiment Station is one of five regional centers.

The strong history of multi-state research and education in the Southeast and the region's outstanding resources in land-grant institutions position the region to excel in Sun Grant research and outreach programs. These same strengths will enable the Initiative to reach an extensive clientele base.

Each of the region's land-grant universities already holds a commitment to bioproducts research. Together, the existing programs amount to an extensive research base and an ability to rapidly launch Initiative-funded programs.

Another asset for the Southeast lies in the inherent productivity of our agricultural lands, aided by a generally temperate climate and long-growing season. The region holds rich potential to produce crops for biobased markets and products.

Use the links to the left to explore our programs and resources!!



News:

2009 Sun Grant Initiative Energy Conference

Sun Grant Undergraduate Interns Make Their Mark

Dr. Joe Bozell edits August edition of journal Clean - Air, Soil, Water

Rep. Herseth Sandlin recognized for Sun Grant efforts

Thune Recognized for Sun Grant Leadership

Contact Us

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Location: 131 Plant Biosciences Building

Alice Pilgeram. Director
(406) 994-1986
pilgeram@montana.edu

Biobased Products Institute - Montana State University

What is the MSU Biobased Institute?

The MSU Biobased Institute supports cutting-edge research to improve the profitability of Montana agricultural through enhancement of current production and development of new value-added applications and products. The Institute strives to be innovative and responsive to the developing needs of the State of Montana and the Pacific Northwest/ Northern High Plains regions. The primary objective of our research is to develop value-added, agriculturally based end-use products with a competitive edge in the global market that are suitable for production in rural Montana.

Dr. Chengci Chen (Central Ag Research Center) in a field of winter triticale for silage and ethanol (MSU 2006)

Other goals of the institute include:

- Improve the quality and diversity of agricultural commodities
- Expand production and pest management strategies with reduced inputs
- Identify and develop new Montana crops
- Develop biofuels and engergy alternatives

Biodiesel Oilseed trial at the Central Ag Research Center (Photo: David Wichman)

The Biobased Institute provides funding to MSU researchers who work directly or indirectly with Ag producers and manufactures to enhance Montana products or to develop new products/applications. The biobased Institute currently supports 14 research projects targeted at improving Montana agriculture. Descriptions of each project can be accessed by linking to the researcher or to the project.

Camelina-fed goats at the Almaltheia dairy (Belgrade, MT) (Photo: David Sands)

Alice Pilgeram is the director of the Biobased Institue.

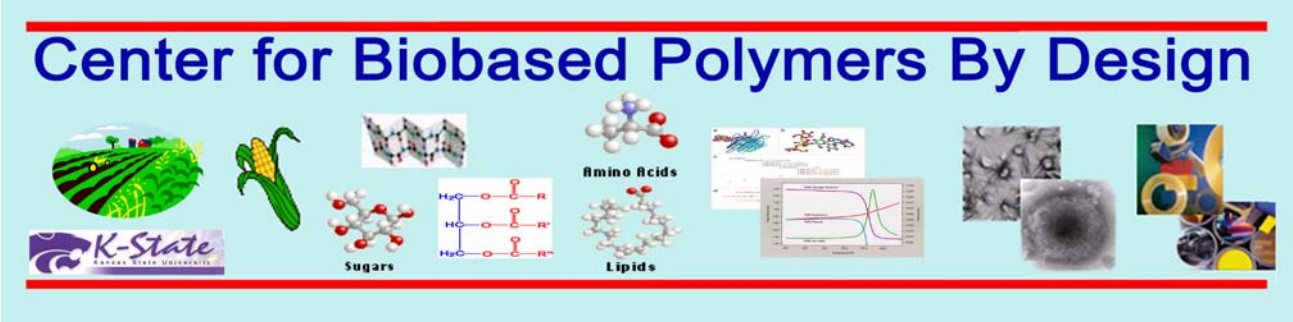
Dr. Barry Jacobsen evaluting the affect of his biocontrol agent, BacJ. on the severity of sigatoka disease of banana in Costa Rica

Text-only

Updated: 04/06/2008

Didn't Find it? Please use our **contact list** or our **site index**.

Center for Biobased Polymers By Design



About the Center

A center for Biobased Polymers By Design (CBPD) was created at Kansas State University in January 2007 to stimulate interdisciplinary research efforts. Environmental issues and reliance on fossil feedstocks are driving forces to find alternative ways to secure sustainable world development. A huge market for polymers for various applications exists, which relies on petroleum feedstocks. Biocarbon from renewables has shown great potential, either partially in the near future, or completely in a long term, for replacing current fossil polymers. The mission of this center is to research and develop biobased polymers that are durable, affordable, scientifically challenging, and environmentally friendly.

The Research Goal is to design biobased polymers from monomer to polymer levels for potential applications in adhesives, resins, and composites, and to facilitate discovery, reaction pathways, mechanism, modification, theory, and characterization of bio-based polymers at both nano and macro scales.

The Educational Goal is to provide an interdisciplinary environment for students who have interests in pursuing a degree at the graduate level in biopolymers, biobased materials, or the biofuels area; to educate the next generation scientists by integrating graduate research into undergraduate programs and K-12 education.

Kansas State University • Manhattan, KS • 66506 • 785-532-6011

March 17, 2008

関西バイオポリマー研究会の活動

産業技術総合研究所

京都工芸繊維大学

〔概要〕

近年、地域環境保全と廃棄物処理の効率化に寄与する観点から、「生分解性ポリマー」の開発に大きな期待がよせられています。我が国においても「化学合成」の分野で著しい進展を見せ、関西地区においても多くの企業、国公立研、大学の研究グループが参画しております。

中央では既に民間会社で構成され、「生分解性評価」の共同研究について大きな実績のある生分解性プラスチック研究会や、高分子学会内のエコマテリアル研究会、リサイクル研究会においてもしばしば最新の成果が公表されております。しかし、この分野での関西地区の比重が大きいにもかかわらず、研究情報の交換や共同研究は殆どなく、産官又は産学で個別に限定したテーマが行われているにすぎません。

今後、産学官にまたがるグループを結集させて、基礎研究の段階から応用技術にいたるまでの情報交換と、人的交流、共同研究の推進を目的として、研究会の発足を企画しました。

本研究会では「生分解性ポリマー」に関係した幅広い分野を対象とし、特に現段階、将来に亙るテーマとして「既存生分解性ポリマーの用途別選択」、「生分解速度の統一評価法の確立」、「安全性評価技術の確立」、「バイオリサイクルとケミカルリサイクル」、「酵素を用いる合成」、「加工技術の精密化」、「生分解性／光分解性ポリマーの開発」、「生体吸収性ハイブリッドバイオマテリアル」、「天然高分子材料」などに重点を置いて、情報交換、調査、技術交流を進めていきたいと考えています。

この分野に関心のある研究者、技術者の大勢の参加を願っています。

産総研バイオポリマーコンソーシアム TOPへ

バイオポリマー研究グループTOP

【 今までの活動記録 】

第1回	(京都工芸繊維大学) H 9年12月19日	グリーンポリマーの新展開
第2回	(京都工芸繊維大学) H10年 3月 4日	生分解性プラスチックへの廃棄物の利用
第3回	(大阪工業技術研究所) H10年 6月19日	グリーンポリマーの新規応用分野を探る
第4回	(京都工芸繊維大学) H10年10月 9日	機能性生分解性高分子の展望(医用材料)
第5回	(大阪工業技術研究所) H11年 1月14日	生分解性プラスチックの評価技術
第6回	(京都工芸繊維大学) H11年 5月26日	汎用ポリマーの微生物分解
第7回	(京都工芸繊維大学) H11年 6月24日	生分解性プラスチックの開発動向(中間レビュー)
第8回	(京都工芸繊維大学) H11年10月26日	米国における生分解性プラスチックの開発動向
第9回	(大阪工業技術研究所)	バイオポリマー実用化への課題

	H12年 3月17日	
第10回	(京都工芸繊維大学) H12年 6月23日	ポリ乳酸開発の最新情報
第11回	(産業技術総合研究所関西センター) H13年 4月13日	天然多糖の材料化
第12回	(京都工芸繊維大学) H13年 5月22日	生分解性ポリマーと生体材料との接点
第13回	(産業技術総合研究所関西センター) H13年 9月19日	難分解性高分子の微生物分解
第14回	(京都工芸繊維大学) H13年12月21日	生分解性プラスチックの農業関連分野への応用
第15回	(京都工芸繊維大学) H14年 3月26日	第二世代生分解性ポリマーと日用品分野への応用
第16回	(産業技術総合研究所関西センター) H14年 6月14日	生分解性ポリマーのメディカル分野への応用
第17回	(京都工芸繊維大学) H14年10月 7日	生物資源の活用
第18回	(産業技術総合研究所関西センター) H15年 1月17日	生分解性プラの汎用化を目指す産総研の取り組み
第19回	(京都工芸繊維大学) H15年 5月16日	生分解性繊維の進歩
第20回	(産業技術総合研究所関西センター) H15年 9月12日	グリーンプラのグローバルな展開を目指して
第21回	(京都工芸繊維大学) H15年11月10～11日	生分解性ポリマーに関する京都国際シンポジウム
第22回	(産業技術総合研究所関西センター) H16年 2月24日	「バイオマスプラスチック」の応用とリサイクル
第23回	(京都工芸繊維大学) H15年 5月24日	バイオマスベースポリマー　－物性と機能性の向上－
第24回	(平安会館) H16年10月28～29日	環境循環型高分子の展望 （エコマテリアル研究会と合同）
第25回	(産業技術総合研究所関西センター) H17年 2月 4日	生物機能と生分解性プラスチック
第26回	(産業技術総合研究所関西センター) H17年10月14日	バイオベースポリマーポリエステル最近の進歩
第27回	(京都工芸繊維大学) H17年12月 8日	バイオベースプラの近未来展望
第28回	(京都工芸繊維大学) H18年 2月10日	高分子エコマテリアル　－基礎研究の最前線－

第29回	(産業技術総合研究所関西センター) H18年 4月21日	産総研におけるバイオベースポリマーの研究展開
第30回	(産業技術総合研究所関西センター) H18年12月12日	バイオマスポリマーの最先端 －自然の恵みを機能材料に－
第31回	(京都工芸繊維大学) H19年 3月 9日	脂肪族ポリエステルの最近の話題
第32回	(京都工芸繊維大学) H19年 6月 1日	脂肪族ポリエステルの高性能化
第33回	(大阪科学技術センター) H19年10月31日	環境技術戦略からバイオプラスチックを展望する
第34回	(京都工芸繊維大学) H19年12月 3日	Kyoto International Symposium on Bldegradable and Biobased Polymers (KISBP 2007)
第35回	(大阪市立工業研究所) H20年 2月29日	バイオプラスチック原料製造のためのプロセス開発
第36回	(京都工芸繊維大学) H20年 7月 2日	バイオベース材料の改質と成形加工
第37回	(産業技術総合研究所関西センター) H20年11月11日	バイオリファイナリーと新材料の開発
第38回	(京都工芸繊維大学) H21年 3月 6日	バイオベースポリマーの基礎から製品まで
第39回	(産業技術総合研究所関西センター) H21年 7月 9日	バイオプラスチックの標準化とバイオベース化技術の動向
第40回	(池田市民文化会館) H21年10月 2日	第1回バイオプラスチックシンポジウム
第41回	(京都工芸繊維大学) H22年 3月 5日	バイオベースプラスチックの実用化と最新の研究
第42回	(産業技術総合研究所関西センター) H22年 8月 6日	セルロースが拓く循環型社会
第43回	(京都工芸繊維大学) H22年 9月14日	「次世代のライフスタイルを支えるバイオ材料の飛躍開発を目指して」発表交流会

連絡先

〒563-8577

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Scientific Program

International Symposium on Biodegradable Composites
ISBPC-2002

Nov. 27 (Wed)	
17:00	Welcome Reception

Nov. 28 (Thu)	
10:00 - 10:10	Opening Remarks
	Kunugi, S. (Dean of the Dept. of Polymer Science & Engineering)
	Fujimoto, H. (Director of Project Promotion Office, General Planning Bureau, Kyoto City)
10:10 - 11:40	Bio/Chemosynthesis and Biodegradability of Biodegradable Polymers 1
	1.1 Doi, Y. (Tokyo, Japan)
	Microbial Synthesis and Properties of Biodegradable Polyesters
	1.2 Jerome, R. (Liege, Belgium)
	Recent Strategies for Tuning the Properties and Potential of Poly e-Caprolactone and Polylactides
11:40 - 13:15	Lunch
13:15 - 14:45	Structure and Property of Biodegradable Polymers
	1.3 Inoue, Y. (Tokyo, Japan)
	Structure and Properties of Some Bacterial Copolyesters
	1.4 Yamane, H. (Kyoto, Japan)
	Modification of Thermal and Rheological Properties of Poly(L-lactic acid) by the Addition of Poly(D-lactic acid)
14:45 - 15:45	Poster Session and Coffee Break
15:45 - 16:45	Bio/Chemosynthesis and Biodegradability of Biodegradable Polymers 2
	1.5 Sung, Y. -K. (Seoul, Korea)
	Synthesis and Characterization of Biodegradable Polymers for Biomedical Applications
	1.6 Shue, F. (Montepellier, France)
	Synthesis and Degradation of Copolymesters
18:30	Mixer

Nov. 29 (Fri)	
9:30 - 11:30	Forum of Young Scientists on Biodegradable Polymers
	2.1 Fujiwara, T. (Richmond, USA)
	Polylactides and their copolymers; new strategies for nano-architecture and applications
	2.2 Ma, J. (Shanghai, China)
	Structure and Properties of Selective Oxidized Regenerated Cellulose
	2.3 Taniguchi, I., Hiraga, K., Oyama, H., Oda, K. and Kimura, Y. (Kyoto, Japan)
	Microbial degradation of poly(ethylene terephthalate) (PET) and degradation mechanism
	2.4 Zou, L. (Shanghai, China)
	Study on the Preparation of Biodegradable High Water Absorbent Material

	with Natural Starch
11:30 - 13:00	Lunch
13:00 - 14:30	Tissue Engineering
	2.5 Soo Hyun Kim, S. H. (Seoul, Korea)
	Biodegradable Elastic Polymer for Tissue Engineering
	2.6 Hutmacher, D. (Shingapore, Shingapore)
	Polymeric Scaffolds for Tissue Engieering Appplications - Design Principles and Processing Technologies
14:30 - 16:45	New Processes and Separation
	2.7 Hamada, H. (Kyoto, Japan)
	Bamboo Particle Filled Bio-degradable Polymer
	2.8 Teraoka, I. (New York, USA)
	Separation of Poly(e-caprolactone) by High Osmotic Pressure Chromatography in Near Theta Solvent
	2.9 Kimura, Y. (Kyoto, Japan)
	Synthesis and Enzymatic Degradation of Functional Biodegradable Polymers
16:45	Closing Remarks

Poster Session Nov. 28 (Attendee sevice 14:45 ~ 15:45)

P-1	Moriyoshi, K., Ohmoto, T., Ohe, T., and Sakai, K. (Osaka, Japan)
	Synergisttic Degradation of Cellulose Acetate by *Neisseria Sicca*
P-2	Iwata, T., Aoyagi, Y., Yamane, H., and Doi, Y. (Saitama, Japan)
	Mechanical properties, high ordered structure and biodegradability of poly([*R*] -3-hydroxybutyrate) films
P-3	Fujita, M. and Doi, Y. (Saitama, Japan)
	In Situ AFM Observation of Thermal Behavior of Poly[(R)-3-hydroxybutyrate] Single Crystal
P-4	He, Y., Shuai, X., Kasuya, K., Doi, Y., and Inoue, Y. (Tokyo, Japan)
	Enzymatic Degradation of Atactic Poly(R, S-3-hydroxybutyrate) Induced by Amorphous Polymers and the Enzymatic Degradation Temperature Window of an Amorphous Polymer
P-5	Feng, L., Watanabe, T., Wang, Y., Kichise, T., Fukuchi, T., Chen, G. -Q., Doi, Y., and Inoue, Y. (Tokyo, Japan)
	Studies on Comonomer Compositional Distribution of Bacterial Poly(3-hydroxybutyrate-*co*- 3-hydroxyhex and Thermal Characteristics
P-6	Moon, S. -I., Urayama, H. and Kimura, Y. (Kyoto, Japan)
	Structural Characterization and Degradability of Poly(L-lactic acid)s Incorporating Phenyl-substituted a-Hydroxy Acids as Comonomers
P-7	Kato, T., Taniguchi, T., Miyamoto, M., and Kimura, Y. (Kyoto, Japan)
	Copolymerization of L-lactide and 13, 26-dihexyl-1,14-dioxacyclohexacosane-2,15-dione
P-8	Mukose, T., Fujiwara, T., Taniguchi, I., Miyamoto, M., and Kimura, Y. (Kyoto, Japan)
	Novel Thermo-Responsive Formation of a Hydrogel by Stereo-Complexation of PLLA/PEG and PDLA/PE
P-9	Honda, N., Taniguchi, I., Miyamoto, M., Kimura, Y. (Kyoto, Japan)
	TBA

Kyoto International Symposium on Biodegradable Polymers

KISBP 2003

Scientific Program (tentative)

Nov. 9 (Sun)	
17:00 –	Welcome Reception

Nov. 10 (Mon)	
9:45 – 10:00	Opening Remarks
	Kunugi, S. (Dean, The Faculty of Textile Science, KIT)
10:00 – 11:50	Structure and Properties of Biodegradable Polymers
	1.1 **Iwata, T.** (RIKEN Institute, Japan)
	1.2 **Vert, M.** (U. Montpellier, France)
11:50 – 13:10	Lunch
13:10 – 15:00	Bio/Chemosynthesis and Biodegradability 1
	1.3 **Chiellini, E.** (U. Pissa, Italy)
	1.4 **Albertsson, A. C.** (Royal Inst., Sweden)
15:00 – 15:45	Poster Session and Coffee Break
15:45 – 17:35	Bio/Chemosynthesis and Biodegradability 2
	1.5 **Kobayashi, S.** (Kyoto U., Japan)
	1.6 **Kaplan, D. L.** (Tufts U., USA)
18:00 - 19:00	Mixer

Nov. 11 (Tue)	
9:00 - 11:30	New Biodegradable Polymers and Materials
	2.1 **Miyamoto, M.** (KIT, Japan) [30 min]
	2.2 **Kawahara, Y.** (KIT, Japan) [30 min]
	2.3 **Kitagawa, K.** (KMIRI, Japan) [30 min]
	2.4 **Furuhashi, Y.** (KIT, Japan) [30 min]
	2.5 **Nakayama, A.** (AIST, Japan) [30 min]
11:30 - 11:40	Closing Remarks

Kyoto International Symposium on Biodegradable and Biobased Polymers
KISBP 2007
Scientific Program

December 2-3, 2007
Kyoto Institute of Technology (Kyoto, JAPAN)

Dec. 2 (Sun)	
17:00	Welcome Reception
Dec. 3 (Mon)	
9:45 - 10:00	Opening Remarks Shigeru Kunugi (Vice President, KIT)
10:00 - 10:25	1.1 Atsuyoshi Nakayama (National Institute of Advanced Industrial Science and Technology, Japan) Synthesis and Biodegradation of Polyamide 4
10:25- 10:50	1.2 Fusako Kawai (Okayama University, Japan) Degradation of a Terephthalate-Containing Polyester by Thermophilic Actinomycetes and Bacillus Species Derived from Composts
10:50 - 11:15	1.3 Shiro Kobayashi (Kyoto Institute of Technolgy, Japan) Enzymatic Ring-Opening Polymerization of Lactones: New Developments and Mecahnistic Aspects of Lipase Catalysis
11:15 - 12:05	1.4 Ramani Narayan (Michigan State University, USA) Principles, Concepts, and Technology Exemplars of BioPlastics
12:05 - 13:30	Lunch
13:30 - 14:20	1.5 Andrzej Duda (Polish Academy of Sciences, Poland) Molar Masses Control in the Ring Opening Polymerization of Aliphatic Cyclic Esters
14:20 - 14:45	1.6 Hideki Yamane (Kyoto Institute of Technology, Japan) Property and Higher-order Structures of Poly(L-lactic acid) / Poly(D-lactic acid) Blends and Melt-Spun Fibers
14:45 - 15:45	Poster Session and Coffee Break
15:45 - 16:25	1.7 Hong LI (Nankai University, P. R. China) Controlled Synthesis of Biodegradable Polymers Using Guanidine-based Initiators
16:25 - 16:55	1.8 Tomoko Fujiwara (The University of Memphis, USA) Stimuli-Responsive Devices of Photochromics–Biodegradable Polymer Conjugates
16:55 - 17:35	1.9 Febi Varghese (Coir Board, Government of India, India) Properties and Assorted Applications of Natural Coir Fibre
17:35 - 17:40	Closing Remarks Yoshiharu Kimura (Organizer)
17:50 -19:00	Mixer

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