

ISFR'99

FINAL PROGRAM

THE 1ST
INTERNATIONAL SYMPOSIUM
ON
FEEDSTOCK RECYCLING
OF
PLASTICS

SENDAI, JAPAN
OCTOBER 31 - NOVEMBER 3, 1999

RESEARCH ASSOCIATION FOR
FEEDSTOCK RECYCLING OF PLASTICS, JAPAN

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Symposium Chairman

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Organized by

Research Association for Feedstock Recycling of Plastics, Japan

Core Research for Evolutional Science and Technology Corporation (CREST) of
Japan Science and Technology Corporation (JST)

Co-Organized by

The Science Council of Japan	The Japan Society of Waste Management Experts
The Chemical Society of Japan	The Society of Polymer Science, Japan
The Society of Chemical Engineers, Japan	The Mining and Minerals Processing Institute of Japan
The Japan Institute of Energy	

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Dr. Toshiaki Yoshioka	(Tohoku Univ.)	Department of Applied Chemistry,
Dr. Miho Uchida	(Tohoku Univ.)	Tohoku University,
		Aoba 07, Aramaki, Aoba-ku, Sendai 980-8579, Japan

MONDAY, NOVEMBER 1, 1999

- 9:00 - 9:10 **Opening Ceremony**
T. Akehata (President of Research Association for Feedstock Recycling of Plastics, Japan)
- 9:10 - 9:20 H. Abe (President of Tohoku Univ.)
- 9:20 - 9:40 **Opening Lecture**
A. Okuwaki[†]
(Tohoku Univ., Japan)
- 9:40 - 10:20 **Plenary Lecture (Chairperson: K. Fujimoto)**
W. Kaminsky*
(Univ. Hamburg, Germany)
" Feedstock Recycling by Pyrolysis of Plastics in a Fluidized Bed"
- PL-1
- 10:20 - 10:40 **Coffee Break**

DEGRADATIVE EXTRUSION

Invited Lectures

(Chairpersons: W. Kaminsky, Y. Sato)

- 10:40 - 11:20 K. Saito* and H. Narita
(Hokkaido Inst. Ind. Tech., Japan)
DE-1 " Studies on the De-hydrochlorination and Oil-Production Technology of Waste Plastics with High Efficiency "
- 11:20 - 12:00 R. Kajiyama*
(Chiyoda Corporation, Japan)
DE-2 " Waste Plastics Liquefaction Technology of Niigata Plastic-to Oil Conversion Center "
- 12:00 - 13:30 **Lunch**

Oral communications

(Chairpersons: C. Vasile, A. Ueno)

- 13:30 - 13:50 T. Kaneko^{*1}, R. Yamada¹, S. Koyama¹, M. Kokubo¹, T. Matsushima², and A. Nishida³
DE-3 (¹Hitachi, Ltd., Japan, ²Hitachi Eng. & Services Co., Ltd., Japan, ³IPA, Japan)
" Status of a New Waste Plastics Recycle Process for Power Generation "
- 13:50 - 14:10 M. Asanuma*, T. Ariyama, and M. Iemoto
(NKK Corp., Japan)
DE-4 " Development of PVC Dechlorination Process "

_ denotes the spekaers

* denotes corresponding authors

† denotes the members of Noike Project (JST-CREST)

- 14:10 - 14:30 S. Kosugi*, K. Hata, and M. Yamamoto
(Toshiba Corp., Japan)
- DE-5 " Dechlorination Characteristic of Vinyl Chloride under
Decompression and Reuse of Household Waste Plastics as Solid
Fuel "

DEPOLYMERIZATION

Invited Lectures

(Chairpersons: *ir. A. Buekens, K. Murata*)

- 14:30 - 15:10 I. C. McNeill*
(Univ. of Glasgow, U.K.)
- DP-1 " Thermal Decomposition Behavior of Mixtures of Two Plastics "

15:10 - 15:30 **Coffee Break**

Oral communications

- 15:30 - 15:50 Y. Sekine*, K. Kato, T. Kamimura, and K. Fujimoto
(Univ. Tokyo, Japan)
- DP-2 " Reaction Control in Radical-Transforming Catalytic Degradation
of Polypropylene using Fe Supported Active Carbon Catalyst under
High H₂ Pressure "

(Chairpersons: *M. N. Hiam, S. Futamura*)

- 15:50 - 16:10 K. Murata¹, Y. Hirano², and Y. Sakata³
(¹Japan Eco Environ. Products, Japan, ²Mitsui Eng. & Shipbuild.
Co., Ltd., Japan, ³Okayama Univ., Japan)
- DP-3 " Thermal Degradation of Plastics into Fuel Oil by a Continuous
Flow-Carberry Reactor "
- 16:10 - 16:30 K. Saeki* and M. Kobayashi
(Nihon-syo-ene-kankyo-seihin Corp., Japan)
- DP-4 "Smart and Tender-to-nature Oil-production from Waste Plastics via
Novel System; KTO "
- 16:30-16:50 M. Day*, J.D. Cooney, C. Touchette-Barrette, and S. E. Sheehan
(National Research Council of Canada, Canada)
- DP-5 "The Pyrolysis of Mixed Plastics, The Role of PVC: A Material of
Concern or Convenience? "
- 16:50 - 17:10 T. Uchimura* and T. Imasaki
(Kyushu Univ., Japan)
- DP-6 " Formation Mechanism of Dioxins and Thier Precursors Studied by
Supersonic Jet Spectrometry "

TUESDAY, NOVEMBER 2, 1999

(Chairperson: A. Okuwaki)

Opening Lecture

9:00 - 9:10

T. Noike[†]

(Tohoku Univ., JST-CREST, Japan)

" Low Loading Recycling of Municipal Wastes in 21th Century "

SOLVOLYTICAL PROCESSES

Invited Lectures

(Chairpersons: A. Okuwaki, H. Tagaya)

9:10 - 9:50

T. Szychaj

(Tech. Univ. Szczecin, Poland)

SV-1

" Aminolysis and Aminoglycolysis of PET "

9:50 - 10:30

A. Oku^{**†}, E. Yamada, and L. Hu

(Kyoto Inst. Tech. Univ., Japan)

SV-2

" Novel Recycling Routes of Waste Poly(ethylene terephthalate) and Poly(carbonate) to Monomers "

10:30 - 10:45

Coffee Break

(Chairpersons: A. Oku, T. Szychaj)

10:45 - 11:25

Y. Sato^{**†}

(National Inst. Resource Environ., Japan)

SV-3

" Monomer Recycling of Thermosetting Resins "

11:25 - 12:05

T. Yoshioka^{**†}

(Tohoku Univ., Japan)

SV-4

" Feedstock Recycling of PVC and PET by Wet-processes "

12:05 - 13:25

Lunch

Oral communications

(Chairpersons: E. Sasaki, N. Lingaiah)

13:25 - 13:45

K. Troev^{*1}, R. Tsevi¹, A. Tsekova¹, Vl. Atanassov², and G. Grancharov²

SV-5

(¹ Inst. Polymers Bulgarian Acad. Sci., Bulgaria, ² Univ. of Chem. Tech. Metallur.)

" Recycling of Polyurethanes. Degradation of Microporous and Flexible Polyurethanes by Phosphonic Acid Diesters "

13:45 - 14:05

T. Kamo^{*1}, Y. Kodera¹, H. Yamaguchi², and Y. Sato^{1†}

(¹ National Inst. Resource Environ., Japan, ² NKK, Japan)

SV-6

" Dechlorination and Degradation of Polyvinylchloride in Solvents "

14:05 - 14:25

S. Futamura^{*} and A. Zhang

(National Inst. Resource Environ., Japan)

SV-7

" Carbon Materials-catalyzed Hydroliquefaction of Flame-retardant Plastics in Organic Solvent "

- 14:25 - 14:45 SV-8 H. Tagaya^{*†}, N. Komuro, Y. Suzuki, M. Karasu, and J. Kadokawa
(Yamagata Univ., Japan)
" The Decomposition Reaction of Plastics and Model Compound of
Them in Sub- and Supercritical Water "
- 14:45 - 15:05 SV-9 S. M. Shin^{1†}, T. Yoshioka^{2†}, and A. Okuwaki^{2†}
(¹CREST, Japan, Dong-A University, Korea, ²Tohoku Univ.,
Japan)
" Fundamental Degradation Behavior of PVC Materials in Aqueous
Solutions at Elevated Temperatures "
- 15:05 - 15:20 **Coffee Break**

PETROCHEMICAL PROCESSES

Invited Lectures

(Chairpersons: H. Narita, M. Day)

- 15:20 - 16:00 PE-1 A. Buekens^{*}
(Free University of Brussel, Belgium)
"Waste Plastics as a Source of Petrochemical Base Materials "
- 16:00 - 16:40 PE-2 Y. Sakata^{*}
(Okayama Univ., Japan)
" Catalytic Degradation of PVC Mixed Plastics into Fuel Oil and
Dechlorination of the Derived Oil "

Oral communications

(Chairpersons: P. T. Williams, T. Kamo)

- 16:40 - 17:00 PE-3 J.M.N. van Kasteren^{*}, M.J.P. Slapak, and F.J.J.G.Janssen
(Eindhoven Univ. Tech., the Netherlands)
"Feedstock recycling of heterogeneous chlorine rich polymer
waste "
- 17:00 - 17:20 PE-4 C. Vasile^{*1}, H. Pakdel², B. Mihai¹, J. N. Murwanashyaka², P. Onu¹,
H. Darie¹, and S. M. Ciocalteu²
(¹ Romanian Academy, Romania, ² Laval Univ., Canada)
" Thermal and Catalytic Decomposition of Mixed Plastics "

- 17:30 - 19:00 **Poster Session**

WEDNESDAY, NOVEMBER 3, 1999

(Chairpersons: T. Masuda, J. Yanik)

- 9:30 - 9:50 P. Peuch and M. N. Hiam*
(BP Chemicals, U. K.)
PE-5 "European Feedstock Recycling and the Development of Polymer Cracking Technology in the UK "
- 9:50 - 10:10 P.T. Williams* and E.A. Williams
(Univ. of Leeds, U. K.)
PE-6 "Composition of Products from the Pyrolysis of a Polypropylene / Polystyrene Mixture"
- 10:10 - 10:30 N. Lingaiah¹, M. A. Uddin¹, A. Muto¹, Y. Sakata¹, and T. Imai²
(¹ Okayama Univ., Japan, ² Toda Kogyo Corp., Japan)
PE-7 "Dehydrochlorination of Organic Chlorine Compounds over Iron Oxide Carbon Composite Catalysts for the Refinement of Waste Plastic Derived Oil "
- 10:30 - 10:50 M. Brebu¹, Y. Sakata¹, M. A. Uddin¹, A. Muto¹, K. Murata², and C. Vasile³
(¹ Okayama Univ., Japan, ² Mitsui Eng. & Shipbuild. Co. Ltd., Japan, ³ "P. Poni" Inst. Macromolec. Chem., Romania)
PE-8 "Composition of Nitrogen Containing Compounds in ABS Degradation Oils"
- 10:50 - 11:10 **Coffee Break**

(Chairpersons: Y. Sakata, T. Tuji)

- 11:10 - 11:30 E. Obuchi, M. Suyama, T. Hayashi, and K. Nakano*
(Fukuoka Univ., Japan)
PE-9 "Decomposition of Mixed Plastics Consist of Polypropylene and Polyethylene Terephthalate into Fuel Oils over Titania/Silica Catalyst "
- 11:30 - 11:50 T. Masuda*, H. Kuwahara, S.R. Mukai, and K. Hashimoto
(Kyoto Univ., Japan)
PE-10 "Production of Fuels from Waste Polyethylene Derived Heavy Oil over Ni/Rey Catalyst in Steam Atmosphere "
- 11:50 - 13:20 **Lunch**

GENERAL TOPICS OF RECYCLING PROCESSES

Invited Lecture

(Chairpersons: M. Wakakura, M. Azhar Uddin)

- 13:20 - 14:00 M. Lin¹, J.-M. Huang¹, H.-F. Shen¹, H.-C. Kuan², C.C.M. Ma²*,
J.-M. Lin², and W.-C. Chang³
GT-1 (¹ Plastics Industry Development Center, Taiwan, ² Natonal Tsing-Hua Univ., Taiwan, ³ Han-Hung Industrial Co., Ltd., Taiwan)
"Processability, Morphological and Mechanical Properties of Wood Fiber Reinforced Recycled Polyolefin Composites"

(Chairpersons: T. Yoshioka, K. Nakano)

Oral communications

- 14:00 - 14:20 G. Teteris *
(Latvian Univ., Latvia)
GT-2 " To a New Method of the Selective Polyolefine Recovery from Mixed Plastic Waste "
- 14:20 - 14:40 Y. Takai, N. Azuma, and A. Ueno *
(Shizuoka Univ., Japan)
GT-3 " Design of Recyclable PS Films and Foams for Better Environment "
- 14:40 - 15:00 **Coffee Break**
- (Chairperson: I. C. McNeill, C. C. M. Ma)
- 15:00 - 15:20 M. Wakakura¹, F. Adachi¹, T. Uchida¹, Y. Oka², A. Miyake², and T. Ogawa²
(¹ Res. Ind. Inst. Kanagawa, Japan, ²Yokohama National Univ., Japan)
GT-4 " A study on Treatment of Waste Fire Retardant Plastics using a Wet Oxidation-method "
- 15:20-15:40 T. Shimamura* and K. Kitagawa
(Kyoto Municipal Inst. Ind. Res., Japan)
GT-5 " Behavior of Bromine in Thermal Decomposition of Paper Base Phenolic Laminate Wastes "
- 15:40-16:00 T. Uematsu *
(JECTEC, Japan)
GT-6 " Relationship between de-HCl gas and CaCO₃ filler in PVC compound as wire and cable "
- 16:00 - 16:20 **Closing Ceremony**
- 17:00 - 19:00 **Banquet**
Atraction

POSTER SESSION: TUESDAY, NOVEMBER 2, 1999 (17:30 - 19:00)

DEGRADATIVE EXTRUSION

- PP-1 J. Yanik¹, R. Özkan², T. Karayildirim¹, S. Ucar¹, and M. Karaduman¹
(¹ Ege Univ., Turkey, ² K.K.T.S.M. Petkim Holding A.S, Turkey)
"Two-Step Processing of PVC containing Polyethylene in Heavy Vacuum Gas Oil"
- PP-2 M. Saglam, M. Yüksel, C. Hanoglu, S. Erdem, J. Yanik, S. Salepçioğlu and L. Ballice*
(Ege Univ., Turkey)
"Pyrolysis of Polyethylene Waste in Free Falling Reactor "
- PP-3 J. Yanik*, L. Ballice, M. Saglam, and M. Yüksel, and S. Salepçioğlu
(Ege Univ., Turkey)
"Hydrocracking of Low-Density Polyethylene Blended with HVGO into Fuels "
- PP-4 T. Akama, T. Yoshioka^{*†}, M. Uchida[†], and A. Okuwaki[†]
(Tohoku Univ., Japan)
"Kinetics of Polyvinyl Chloride Degradation using TG-MS"
- PP-5 Y. Sakata*, R. Tada, M. A. Uddin, and A. Muto
(Okayama Univ., Japan)
"Thermal Degradation of the Mixture of Spent Anion Exchange Resin and Polystyrene into Fuel Oil "
- PP-6 H. Ukei, M. Taka, Y. Takai, N. Azuma, and A. Ueno*
(Shizuoka Univ., Japan)
"Cl₂ Gas Recovery from Waste PVC "
- PP-7 Y. Tanaka, T. Tsuji*, T. Shibata, O. Uemaki, and H. Itoh
(Hokkaido Univ., Japan)
"Dehydrochlorination Rate in Thermal Degradation of PVC "
- PP-8 T. Kuwabara, Y. Watanabe, K. Isobe*, and H. Morohashi
(Ind. Res. Inst. Niigata Pref., Japan)
"Dechlorination of Mixed Plastics Containing PVC by a Circulating Degradative Extrusion Process "
- PP-9 J. Kano*, Q. Zhang, and F. Saito
(Tohoku Univ., Japan)
"Dechlorination from PVC by Ball Milling without Heating "
- PP-10 M. Uchida[†], N. Saito, T. Yoshioka^{*†}, and A. Okuwaki[†]
(Tohoku Univ., Japan)
"Thermal Degradation of Polyvinyl Chloride"

- PP-11 E. Sugiyama*, H. Muta, and H. Ibe
(Toshiba Corporation, Japan)
" A Process of Municipal Waste Plastic Thermal Degradation into Fuel Oil "

PETROCHEMICAL PROCESS

- PP-12 T. Tsuji*, Y. Tanaka, T. Shibata, O. Uemaki, and H. Itoh
(Hokkaido Univ., Japan)
" Two-Stage Thermal Gasification of Plastics "
- PP-13 M. Watanabe, T. Adschiri, and K. Arai*
(Tohoku Univ., Japan)
" Development of a Recycling Process for Waste Polyethylene: Pyrolysis of Model Hydrocarbons in the Presence of Supercritical Water "

DEPOLYMERIZATION

- PP-14 T. Kamimura, Y. Sekine*, and K. Fujimoto
(Univ. Tokyo, Japan)
" Radical-Transforming Cracking of Polystyrene under H₂ Atmosphere "
- PP-15 Y. Matsumoto* and K. Hiyoshi
(Ind. Tech. Res. Inst. Kanagawa, Japan)
" Liquid Phase Cracking of Styrene Derivative Polymers with Metal Supported Carbon Catalysts "
- PP-16 K. Murata*¹, Y. Hirano¹, and Y. Sakata²
(¹ Mitsui Eng. & Shipbuild. Co., Ltd., Japan, ² Okayama Univ., Japan)
" Thermal Degradation of Mixed Plastics Containing Poly(vinyl Chloride) by a Continuous Flow Stirred Tank Reactor "
- PP-17 J. Goto*¹, T. Adschiri², and K. Arai²
(¹ Sumitomo Bakelite Co. Ltd., Japan, ² Tohoku Univ., Japan)
" Chemical Recycling of Thermosetting Resin in Supercritical Water "
- PP-18 T. Imai*¹, T. Matsui¹, Y. Fujii¹, T. Nakai¹, and S. Tanaka²
(¹ Toda Kogyo Corp., Japan, ² Okura Kogyo Corp., Japan)
" Combustion Properties of Polyethylene Added Iron Oxides "

SOLVOLYTICAL PROCESSES

- PP-19 M. Ota, T. Yoshioka*[†], M. Uchida[†], and A. Okuwaki[†]
(Tohoku Univ., Japan)
" Oxygen-oxidation of Ethylene Glycol in NaOH Solutions at Elevated Temperatures"
- PP-20 S. Sotoma^{1†}, S.-M. Shin^{2†}, T. Yoshioka^{1††}, M. Uchida^{1†}, and A. Okuwaki^{1†}
(¹Tohoku Univ., ²Dong-A University, Korea)
" Leaching of Plasticizer and Chlorine from Mixed Waste Plastics in NaOH Solutions at Elevated Temperatures"

- PP-21 S. Kubota* and O. Ito
(Ind. Tech. Center Wakayama Pref., Japan)
" Feedstock Recycling of Cured Unsaturated Polyesters Waste Using Glycol "
- PP-22 T. Takaki*
(Takaki Spec. Ind. Co., Ltd., Japan)
" Recycling of Polystyrene and Other Plastic Waste "
- PP-23 T. Moriya*¹ and H. Enomoto²
(¹ Tohoku Electric Power Co., Inc., Japan, ² Tohoku University, Japan)
" Characteristics of Products by Supercritical Water Cracking in Comparison to Thermal Cracking "
- PP-24 M. Goto*, H. Koyamoto, A. Kodama, T. Hirose, and S. Nagaoka
(Kumamoto Univ., Japan)
" MWD Analysis in Decomposition of PET in Supercritical Methanol "

GENERAL TOPICS OF RECYCLING PROCESSES

- PP-25 Y. Hoshika*¹ and Y. Nihei²
(¹ Shinshu Univ., Japan, ² Univ of Tokyo, Japan)
" Relationship between Gas Chromatographic Data for the Gas Components in Head space of ABS-copolymer and its Odor Perception "
- PP-26 H. Ando, H. Tagaya*[†], J. Kadokawa, and M. Karasu
(Yamagata Univ.)
" Degradation of Thermoplastic Resin in Sub- and Supercritical Water "
- PP-27 Y. Inagaki*¹ and S. Kiuchi²
(¹ Sony Corp., Japan, ² Lion Corp., Japan)
" Reclamation to Convert Waste Polystyrene into a Polymer Flocculant for Water Treatment "
- PP-28 M. Mouri*¹, N. Sato¹, H. Okamoto¹, M. Matsushita¹, K. Fukumori¹, H. Honda², K. Nakashima², K. Takeuchi², S. Otsuka³, Y. Suzuki³, and M. Owaki³
(¹ TOYOTA Central R&D Labs., Inc., Japan, ² TOYOTA GOSEI Co. Ltd., Japan, ³ TOYOTA MOTOR Corp., Japan)
" New Continuous Recycling Technology for Vulcanized Rubbers "
- PP-29 T. Shoji*, K. Shindoh, Y. Kajibata, and A. Sodeyama
(Kawasaki Heavy Ind, LTD., Japan)
" Plastic Waste Recycling by Entrained-Flow Gasification "
- PP-30 T. Noguchi*, N. Satoh, M. Miyashita, and H. Watanabe
(Sony Corp., Japan)
" Recycling TV Cabinets Using Orange Oil "

- PP-31 H. Tagaya[†], C. Katoh, K. Katoh, and J. Kadokawa
(Yamagata Univ., Japan)
"The Reaction of Model Compounds of Plastics in Sub- and Supercritical
D₂O "
- PP-32 S.-J. Chiu^{*} and W.-H. Cheng
(MingChi Institute of Technology, Taiwan)
"Promotional Effect of CuCl₂ on the Degradation of Poly(ethylene terephthalate)"
- PP-33 S. Nakai^{*1}, M. Hosomi¹, and T. Itoh²
(¹ Tokyo University of Agriculture & Technology, Japan, ² Nippon Soda Co. Ltd.,
Japan)
"Biodegradation of Bisphenol A used in Plastic Industries"
- PP-34 Y. Ishihara^{*1}, M. Mizuno¹, N. Toyoshima¹, K. Saido², and T. Kuroki³
(¹ Nippo Ltd., Japan, ² Nihon University, Japan, ³ Polymer Decomposition Laboratory
Co., Ltd., Japan)
"Liquefaction of Waste Plastic by a New Type Reactor (KUROKI PROCESS-6) "
- PP-35 G. Teteris^{*}
(Latvian Univ., Latvia)
"To the Limitations in Search of the Optimal Plastic Recycling Technology"

TECHNICAL TOUR : THURSDAY, NOVEMBER 4, 1999

Post Symposium Technical Day-Tours is arranged to oil plants from waste plastics and recycling center at Niigata (The Niigata Plastics Liquefaction Center), on November 4, 1999. A chartered bus start from Sendai and go to toward Niigata. The tour break up at Niigata Station. If necessary, foreign participants will be guide to Tokyo Station.

SCHEDULE:

November 4, 1999

Sendai (Sendai Tokyu Hotel)	8:00
Tohoku Expressway	
Banetsu Expressway	
Niigata	
Lunch	12:30 - 13:15
The Niigata Plastics Liquefaction Center	13:45 - 15:00
Niigata Station (break up)	15:30

THE NIIGATA PLASTICS LIQUEFACTION CENTER:

A pyrolytic liquefaction plant, is the next link in the development of advanced plastic waste liquefaction technology being pushed forward by the plastic Waste Management Institute.

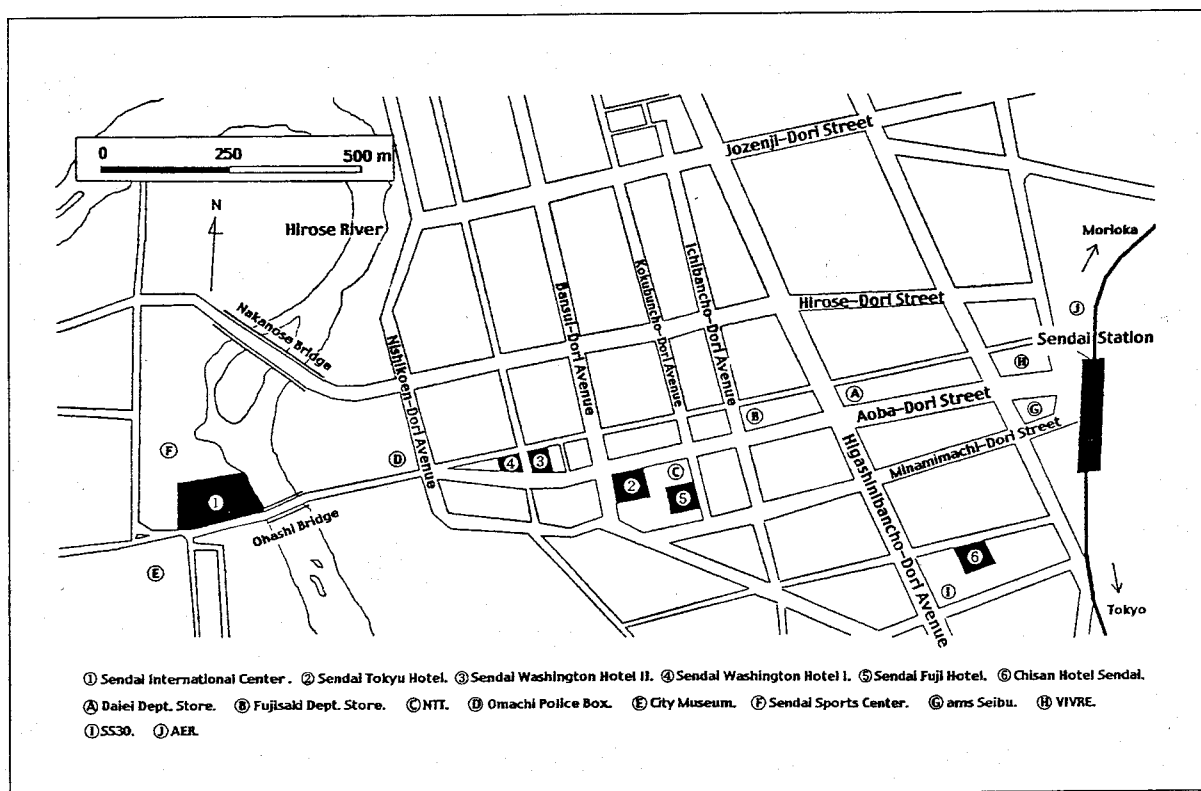
Work on the plant was started in September 1995 by Rekisei Koyu Co., Ltd., a local firm, in Heiwa-cho, Niigata City.

A ceremony was held on November 12, 1996 to mark the completion of the plant. Plant operations were begun at that time, however, a fire on December 19 of that year shut down the facility.

As a result of the efforts made in the year since the fire, restoration work was completed on December 2, 1997, and the plant beg test operations in the second half of the month. Now, regular operations have continued since April 1998 after test operation.

The 1st International Symposium on Feedstock Recycling of Plastics (ISFR'99) Schedule Table

date	Oct. 31	Nov. 1	Nov. 2	Nov. 3	Nov. 4
Morning		Opening Ceremony Opening Lecture Plenary Lecture	Opening Lecture [Solvolytical Processes] Invited Lectures	Oral Session	Technical Tour
		Coffee Break	Coffee Break	Coffee Break	
		[Degradative Extrusion] Invited Lectures	Invited Lectures	Oral Session	
Noon		Lunch	Lunch	Lunch	
Afternoon	Registration	Oral Session [Depolymerization] Invited Lecture	Oral Session	[General Topics of Recycling Processes] Invited Lecture Oral Session	
		Coffee Break	Coffee Break	Coffee Break	
		Oral Session	[Petrochemical Processes] Invited Lectures Oral Session	Oral Session Closing Ceremony	
Evening	Welcome Reception		Poster Session	Banquet Attraction	



<編集後記>

今回より編集に参加させていただいています。不慣れな点が多いですが、みなさんの足手まといにならないよう頑張ります(T.F.)。

No.3 から専門の印刷会社に依頼して出版できるようになりました。外見が良くなった分、中身もこれから充実させて行きた

いと考えております。(T.K.)

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