The forward-looking statements are based largely on information available as of the date hereof, and are subject to risks and uncertainties which may be beyond company control. Actual results could differ largely, due to numerous factors, including but not limited to the following: Group companies execute businesses in many different fields, such as information and electronics, performance products, polymers and processed products, pharmaceuticals, carbon and inorganic products, petrochemicals, and these business results are subjected to influences of world demands, exchange rates, price and procurement volume of crude oil and naphtha, trend of market price, speed in technology innovation, National Health Insurance price revision, product liabilities, lawsuits, laws and regulations.
List of Abbreviations

MCHC: Mitsubishi Chemical Holdings Corporation
MCC: Mitsubishi Chemical Corporation
MTPC: Mitsubishi Tanabe Pharma Corporation
MPI: Mitsubishi Plastics, Inc.
MRC: Mitsubishi Rayon Co., Ltd.
TKI: The KAITEKI Institute, Inc.
MCM: Mitsubishi Chemical Medience Corporation
Today’s Agenda

- **Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration**
  - MCHC Group overview
  - Kashima Plant: Petrochemical business overview

- **APTSIS 15 (FY2011-FY2015)**
  - Summary of APTSIS 10
  - Management challenges under APTSIS 15
  - Specific reforms in and progress of APTSIS 15

- **APTSIS 15 Business Topics**
  - MMA/PMMA, Carbon fibers and composite materials (Performance composite materials)
  - Lithium-ion battery materials, White LED lighting and materials, OLED (Organic photo semiconductor), Organic photovoltaic modules and materials
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration
- MCHC Group overview
  - Kashima Plant: Petrochemical business overview

APTSIS 15 (FY2011-FY2015)
- Summary of APTSIS 10
- Management challenges under APTSIS 15
- Specific reforms in and progress of APTSIS 15

APTSIS 15 Business Topics
- MMA/PMMA,
  - Carbon fibers and composite materials (Performance composite materials)
- Lithium-ion battery materials,
  - White LED lighting and materials,
  - OLED (Organic photo semiconductor),
  - Organic photovoltaic modules and materials
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration(1)

*Amount of damage = sum of operating and extraordinary losses in the fiscal years ending March 31, 2011 and 2012

<table>
<thead>
<tr>
<th>Group/Amount of damage*</th>
<th>Location</th>
<th>Company</th>
<th>Site</th>
<th>Damage from earthquake</th>
<th>Progress in restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tsukuba Plant (Ushiku city)</td>
<td>Entire plant shut down.</td>
<td>Recovery work almost finished. Resumed all equipment operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mitsubishi Chemical Medience</td>
<td>Kashima Plant (Hasaki Zone)</td>
<td>Utilities cut off temporarily; operations continued using minimal resources.</td>
<td>All utilities operational. Recovery complete by the end of the early May holiday (Golden Week).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nippon Kasei Chemical</td>
<td>Onahama Plant</td>
<td>Plant operations halted due to lack of power and water and damage to some equipment.</td>
<td>With the exception of some plants and peripheral equipment in need of repair, the site is back up and running normal operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>API Corp.</td>
<td>Iwaki Plant</td>
<td>Facilities damaged.</td>
<td>Resumed operations at the end of May.</td>
</tr>
</tbody>
</table>

**K2E** = the Kashima No.2 ethylene production facility

***K1E = the Kashima No.1 ethylene production facility
# Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration (2)

*Amount of damage = sum of operating and extraordinary losses in the fiscal years ending March 31, 2011 and 2012

<table>
<thead>
<tr>
<th>Group/Amount of damage* (Billions of Yen)</th>
<th>Location</th>
<th>Company</th>
<th>Site</th>
<th>Damage from earthquake</th>
<th>Progress in restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTPC (6.0)</td>
<td>All six prefectures in Tohoku</td>
<td>MTPC</td>
<td>Tohoku Branch and other sites within the area</td>
<td>Difficult to sustain ordinary business operations.</td>
<td>Since March 28, resumed mainly safety management operations to meet demand from medical institutions.</td>
</tr>
<tr>
<td></td>
<td>Tochigi pref. Ibaraki pref.</td>
<td>Mitsubishi Tanabe Pharma Factory</td>
<td>Ashikaga Plant and Kashima Plant</td>
<td>Equipment shut down temporarily, but there was no major damage done to buildings or equipment.</td>
<td>Ashikaga Plant and Kashima Plant resumed equipment operations on April 11.</td>
</tr>
<tr>
<td></td>
<td>Chiba pref.</td>
<td>MP-Logistics</td>
<td>East Japan Distribution Center</td>
<td>Stopped inbound and outbound freight due to damage to portions of building and equipment.</td>
<td>Resumed inbound and outbound freight movement on April 11.</td>
</tr>
<tr>
<td>MPI (5.0)</td>
<td>Ibaraki pref.</td>
<td>MPI MKV DREAM</td>
<td>Tsukuba Plant</td>
<td>All manufacturing equipment shut down.</td>
<td>Resumed operations on some equipment by the end of March. Resumed all equipment operations during the end of April.</td>
</tr>
<tr>
<td></td>
<td>Fukushima pref.</td>
<td>MPI</td>
<td>Koriyama Plant</td>
<td>All manufacturing equipment shut down.</td>
<td>Resumed equipment operations.</td>
</tr>
<tr>
<td></td>
<td>Fukushima pref.</td>
<td>Toei Kasei</td>
<td>Ono Factory</td>
<td>Plant completely shut down. Equipment damaged.</td>
<td>Resumed some equipment operations on April 8. Others will be phased in.</td>
</tr>
</tbody>
</table>
## Impact of the Earthquake on Our Financial Results and Forecast

Also, included 9.0 billion yen insurance in FY2011 forecast.
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration

- MCHC Group overview
- Kashima Plant: Petrochemical business overview

APTSIS 15 (FY2011-FY2015)

- Summary of APTSIS 10
- Management challenges under APTSIS 15
- Specific reforms in and progress of APTSIS 15

APTSIS 15 Business Topics

- MMA/PMMA, Performance composite materials (Carbon fibers and composite materials)
- Lithium-ion battery materials, White LED lighting and materials, OLED (Organic photo semiconductor, Organic photovoltaic modules and materials
Earthquake Damages

1) Berths damaged

Sunken ground

Mostly recovered

2) Sunken ground

3) Ship aground

Large ship (about 180k DWT) ran aground near port entry
Sailed out

Damaged bulkhead facilities, deformed piping, loading arm collapsed, etc.
Restored as needed

No major damage to the plant itself but the entire plant shut down
K2E resumed on May 20. K1E will resume operations at the end of June after regular maintenance

Crude Oil Berth (Kashima Oil)

K2E = the Kashima No.2 ethylene production facility
K1E = the Kashima No.1 ethylene production facility

MCC

Kashima Oil

Tokyo Electric Power

Kashima-nada Sea

DWT: deadweight tonnage
Earthquake Damages

1) Berths

Just after earthquake  ➔  After recovery

Piping bent

Mitsubishi Chemical Holdings Corporation
Earthquake Damages

2) Sunken Ground

Just after earthquake → After recovery

Sank in about 1m
3) Ship Aground at Entry to Central Channel

-sailed out on May 3.-
With the understanding of the regulatory bodies, we are postponing regular maintenance at Kashima No.2 ethylene production facility and derivatives facilities until the end of August. This will allow us to build inventory and ensure that our supply chain is maintained.

Inventories

Plan before change 6/30～8/17
Current plan 8/30～10/17
Use heavy oil boiler, which has extra capacity, to supply power
Kashima Plant: Began selling power from Kashima-kita Electric Power to Tokyo Electric Power (April 21)
(Max) Enough to supply power for 300,000 households
Naoetsu Plant: Begin selling power to Tohoku Electric Power (Planned mid June)
(Max) Enough to supply power for 150,000 households

Avert impact from power usage reductions by effectively utilizing capacity at Kashima-kita Electric Power

- Power generation capacity: 650,000 kW
- Ordinary usage: 300,000 kW
- Up to 120,000 kW for sale
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration
- MCHC Group overview
- Kashima Plant: Petrochemical business overview

APTSIS 15 (FY2011-FY2015)
- Summary of APTSIS 10
- Management challenges under APTSIS 15
- Specific reforms in and progress of APTSIS 15

APTSIS 15 Business Topics
- MMA/PMMA, Carbon fibers and composite materials (Performance composite materials)
- Lithium-ion battery materials, White LED lighting and materials, OLED (Organic photo semiconductor), Organic photovoltaic modules and materials
# APTSIS 10 Basic Strategies and Results

**Respond to economic contraction by business reform, accelerating innovation, and leaping ahead**

<table>
<thead>
<tr>
<th>Basic concept of APTSIS 10</th>
<th>Growth Strategy</th>
<th>Innovation Strategy</th>
<th>Leaping Ahead (M&amp;A)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus on Growth Business</strong></td>
<td>◆ Focus on Growth Business</td>
<td>◆ Focused acceleration</td>
<td>◆ Prompt realization</td>
</tr>
<tr>
<td>- FPD components - Pharmaceuticals</td>
<td>- White LEDs</td>
<td>- Quadrant</td>
<td>- Quadrant</td>
</tr>
<tr>
<td>◆ Main focus on petrochemicals</td>
<td>- Lithium-ion battery materials</td>
<td>- Nippon Synthetic Chemical Industry</td>
<td>- Nippon Synthetic Chemical Industry</td>
</tr>
<tr>
<td>- Significant reduction in CAPEX</td>
<td>for hybrid electric vehicles</td>
<td>- Taiyo Nippon Sanso</td>
<td>- Taiyo Nippon Sanso</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MRC</td>
<td></td>
</tr>
</tbody>
</table>

**Innovation Strategy**
- Focused acceleration
  - White LEDs
  - Lithium-ion battery materials for hybrid electric vehicles

**Leaping Ahead (M&A)**
- Prompt realization
  - Quadrant
  - Nippon Synthetic Chemical Industry
  - Taiyo Nippon Sanso
  - MRC

**Prompt realization of Leaping Ahead**
- Investment for Leaping Ahead:
  - approx. ¥250.0 billion
- Net sales increased by ¥627.0 billion
- Operation income increased by ¥53.5 billion

**Acceleration of Structural Reforms & Fixed cost reduction**
- Withdrawal from unprofitable businesses*
  - Net sales: ¥320.0 billion/y
  - Operating income: (¥17.0 billion/y) (Annual effect estimated on actual results)
- Accumulated extraordinary loss: ¥17.0 billion
- Fixed cost reduction: ¥32.0 billion

**Operation income**
- APTSIS10 Targets
  - FY2010 results
  - ≥ ¥190.0 billion
  - ¥226.5 billion

**ROA (income before income taxes/total assets)**
- APTSIS10 Targets
  - FY2010 results
  - ≥ 6% 5.1%
  - (without the impact of the earthquake 5.7%)

**GHG emission reductions**
- APTSIS10 Targets
  - FY2010 results
  - ≥ 20% emission reduction (FY2015) as planned

---

*Nishi Nippon Ethylene was established in April 2011 to unify naphtha cracker operations of MCC and Asahi Kasei Chemicals in Mizushima*
Business Challenges

- Business Environment
  - Globalization
  - Sustainability
  - The Great East Japan Earthquake of March 11

- Solutions
  - Differentiation
  - Innovation
Globalization ($G\infty$)

1. Difficulty of differentiation (by digitalization and IT)
2. Securing resources (key challenges: rare earths, oil, and the Great East Japan Earthquake)
3. Speed (in an increasingly borderless world)

Decoupling

Asia, South America, Eastern Europe, Middle East
- Capturing Asian growth markets with sales of commodities and other resources
- Scale and global expansion
  ◆ Inflationary risks ◆ Country risks

Japan, Western Europe, North America
- Heading toward high performance and high-added value and solutions
  ◆ Volatile trends ◆ Sovereign risks

State Capitalism
Free Market

Two-pronged strategy: Specialties and Commodities
Increase PTA earnings driven by growing demand for polyester in Asia
Increase MMA earnings via global optimization of production

MCC's PTA production sites
- Saudi Arabia: MMA 250kt/y (Targeted in 2014)
- UK: MMA Cassel 210kt/y
- China: MMA: Huizhou 90kt/y, Shanghai 100kt/y, PTA Ningbo 600kt/y
- South Korea: MMA Daesan 90kt/y, Yeosu 100kt/y, PTA Yeosu 1,700kt/y (Planned in 2013)
- US: MMA Beaumont 160kt/y, Memphis 180kt/y
- India: PTA West Bengal 1,270kt/y

Competitors' production sites
- Singapore: MMA 120kt/y
- Taiwan: MMA Dasha 100kt/y
- Thailand: MMA Bangkok 180kt/y
- Saudi Arabia: MMA 250kt/y (Targeted in 2014)
- Japan: MMA Otake 220kt/y
- South Korea: MMA Daesan 90kt/y, Yeosu 100kt/y, PTA Yeosu 1,700kt/y (Planned in 2013)
- US: MMA Beaumont 160kt/y, Memphis 180kt/y
- India: PTA West Bengal 1,270kt/y

MRC's MMA monomer production sites
- MMA Global share
  - MCC 9%
  - MRC 38%

PTA Global share
- MCC 9%
- Competitors' production sites

Competitors' production sites
- Evonik
- Sumitomo Chemical
- MRC
- DOW
Global Operation of High Performance Polymers

Globalize by establishing local production and overseas sales networks
Increase sales in Europe, the US and growing emerging countries

<table>
<thead>
<tr>
<th>Region</th>
<th>Capacity (kt/y)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>10</td>
<td>PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>China</td>
<td>100</td>
<td>PP, PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>Japan</td>
<td>400</td>
<td>PP, PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>US</td>
<td>100</td>
<td>PP, PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>Europe, Africa</td>
<td>7</td>
<td>AEP products</td>
</tr>
<tr>
<td>Other Asia</td>
<td>20</td>
<td>PP, PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>Asia</td>
<td>2</td>
<td>AEP products</td>
</tr>
<tr>
<td>Thailand</td>
<td>60</td>
<td>PP, PBT, PC (Performance polymers)</td>
</tr>
<tr>
<td>US</td>
<td>100</td>
<td>AEP products</td>
</tr>
</tbody>
</table>

* Performance polymers refer to polyolefins, PVCs, polyesters and others having higher performance characteristics through the processing of compounds.
* "AEP products" refer to molded products with high-performance engineering plastics produced by Quadrant AG.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Global Share (MCHC estimates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP compounds</td>
<td>About 10% (for Automobile)</td>
</tr>
<tr>
<td>Performance polymers*</td>
<td>About 60% (for airbag covers)</td>
</tr>
<tr>
<td></td>
<td>&gt; 10% (as adhesive polymer for food packaging)</td>
</tr>
<tr>
<td>PBT compounds</td>
<td>About 5%</td>
</tr>
<tr>
<td>PC compounds</td>
<td>&gt; 10%</td>
</tr>
</tbody>
</table>

Mitsubishi Chemical Holdings Corporation
The world is approaching a major turning point

Nuclear power accident transforms energy policies

Sustainability

The Environment
Notably global warming, water, desertification, and the biodiversity crisis

Economy
Issues including resource depletion, food, financial, and economic crisis

Society
Such as population of 7 billion, aging society and problems of developing countries
People around the world are now exploring business opportunities for such products as LEDs, lithium-ion batteries, and silicon photovoltaic modules. ‘Unique’ competitiveness, value, and digitalization and modularization.
Differentiation-1

Business Strategy of LED and OLED Lighting

Combination of material technology and Verbatim sales channel

High

Feedback from downstream products into material

Focusing area

Focusing area

Value Addition

OLED materials
Phosphor
Substrates
Chips

Without fabrication facilities

OEM
EMS

Fixtures
LED modules
OLED modules

Control systems
Tunable Lightings
Light & Building 2010
LED lighting onto the market
EU: Sep.'10; USA: Feb.'11; Japan: Jul.'11

Materials
Modules
Retrofit manufacturing
Fixture manufacturing
Cutting Stamper
Disc manufacturing
Marketing Standardization
Sales
Install
Service
Brand/OEM Sales channel
Differentiation-2

**MTPC’s Pipeline**

(As of Oct. 29, 2010)

**Japan**

- **Phase 1**
  - **Cholebine** (Hyperphosphatemia)
  - **MT-4666**

- **Phase 2**
  - **TA-7284** (Type 2 Diabetes Mellitus)
  - **MP-435** (Rheumatoid Arthritis)
  - **MP-214** (Schizophrenia)

- **Phase 3**
  - **FTY720** (Multiple Sclerosis)
  - **TA-7284** (Type 2 Diabetes Mellitus)
  - **Cholebine** (Type 2 Diabetes Mellitus)
  - **Argatroban** (Dialysis)
  - **Vig-IH** (IgG2 deficiency)
  - **CTN0148** (Rheumatoid Arthritis)

- **Filed**
  - **ARG-1057**
  - **MT-4666**
  - **BK-4SP** (vaccine)
  - **Modiodal** (OSAS)

- **Expected high profitability; targeted to be launched by 2015**
  - **APTA-2217** (Asthma)
  - **Maintate** (Chronic Heart Failure)
  - **Remicade** (Crohn’s disease)
  - **VG-IH** (Myasthenia Gravis)
  - **MP-424** (Chronic Hepatitis C)
  - **MCI-186 (Stroke)
  - **MT-2832** (Secondary Hyperparathyroidism)

**Overseas**

- **Phase 1**
  - **MP-124**
  - **MP-136**
  - **TA-8995**
  - **MT-3995**
  - **GB-1057**

- **Phase 2**
  - **MCI-186 (Stroke)**
  - **MP-513** (Type 2 Diabetes Mellitus)
  - **MT-2832** (Secondary Hyperparathyroidism)

- **Phase 3**
  - **TA-7284** (Type 2 Diabetes Mellitus)
  - **T-0047** (Obesity)

- **Filed**
  - **TA-7284** (Type 2 Diabetes Mellitus)
  - **TA-1790** (ED; US, Korea)
  - **FTY720** (Multiple Sclerosis)

**Total**

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>10</th>
<th>13</th>
<th>6</th>
<th>1</th>
</tr>
</thead>
</table>

**Mitsubishi Chemical Holdings Corporation**

Expecting high profitability; targeted to be launched by 2015

**Major licensed products**

- **Cholebine** (Hyperphosphatemia)
- **MP-435** (Rheumatoid Arthritis)
- **MP-214** (Schizophrenia)
- **FTY720** (Multiple Sclerosis)
- **TA-7284** (Type 2 Diabetes Mellitus)
- **Argatroban** (Dialysis)
- **Vig-IH** (IgG2 deficiency)
- **CTN0148** (Rheumatoid Arthritis)
- **ARG-1057**
- **MT-4666**
- **BK-4SP** (vaccine)
- **Modiodal** (OSAS)
- **APTA-2217** (Asthma)
- **Maintate** (Chronic Heart Failure)
- **Remicade** (Crohn’s disease)
- **VG-IH** (Myasthenia Gravis)
- **MP-424** (Chronic Hepatitis C)
- **MCI-186 (Stroke)**
- **MT-2832** (Secondary Hyperparathyroidism)

**Organisms**

- **As of Oct. 29, 2010**

**References**

- **ALS**: Amyotrophic lateral sclerosis
- **ED**: Erectile dysfunction
- **OSAS**: Obstructive sleep apnea syndrome
- **HIT**: Heparin-induced thrombocytopenia

**Licensing-out to Novartis**

- **FTY720** (Multiple Sclerosis/US,Russia)

**Approved (Licensing-out)**

- **TA-1790** (ED; US, Korea)
- **APTA-2217** (Asthma)
- **Remicade** (Crohn’s disease)
- **VG-IH** (Myasthenia Gravis)
- **MP-424** (Chronic Hepatitis C)
- **Modiodal** (OSAS)

**Good Chemistry for Tomorrow**

Creating better relationships among people, society, and our planet
Enhancement of MTPC’s Pipeline (As of June 2011)

**Japan**
- **Choline** (Hyperphosphatemia)
  - MT-4666
- **MP-435** (Rheumatoid Arthritis)
  - Phase 2
- **MP-214** (Schizophrenia)
  - Phase 2
- **MT-2832** (Secondary Hyperparathyroidism)
  - Phase 3
- **MP-513** (Type 2 Diabetes Mellitus)
  - Phase 3
- **MP-424** (Chronic Hepatitis C)
  - Filed

**Overseas**
- **MP-124**
  - Phase 1
- **MP-136**
  - Phase 1
- **TA-8995**
  - Phase 1
- **MT-3995**
  - Phase 1
- **TA-7284** (Obesity)
  - Phase 1
- **TA-1790 (ED; Korea)**
  - Agreed to approval
- **MT-1303**
  - Phase 1
- **GB-1057**
  - Phase 1

**Total**
- **9 (+2)**
- **8 (-2)**
- **8 (-5)**
- **8 (+2)**
- **6 (+5)**

**Additional indications**
- **Argatroban** (Dialysis)
- **Maintate** (Chronic Heart Failure)
- **Anti-D Human Immunoglobulin**
- **AZANIN**

**Major licensed products**
- **Expecting high profitability; targeted to be launched by 2015**
- **Agreed to approval**
- **Licensing-out to Novartis**
- **Approved**
- **FTY720 (Gilenya)** (Multiple Sclerosis) EU

**Mitsubishi Chemical Holdings Corporation**
MTPC’s New Products Expected in FY2011

- **Lexapro** (Anti-depressant) - Filed by Janssen in Jun. 2010
  - Co-marketing with Janssen
  - Filed

- **Symponi*** (RA) - Filed by Janssen in Jun. 2010
  - Co-marketing with Janssen

- **Kremezin** (Chronic renal failure)
  - Transferred from Daiichi Sankyo
  - Started marketing in Apr. 2011
  - Approved, Sales preparation

- **Remicade** (CD; dose escalation)
  - Filed in Dec. 2010

- **Acref** (Cancer pain)
  - Approved in Oct. 2010

- **MP-424** (Chronic hepatitis C)
  - Filed in Jan. 2011

- **FTY720** (Multiple sclerosis)
  - Filed in Dec. 2010

- **Maintate** (Chronic heart failure)
  - Approved in May 2011

- **Mochida** received approval in Apr. 2011

- **FTY720** (Multiple sclerosis) - Filed in Dec. 2010
  - Co-marketing with Mochida

- **Lexapro** (Anti-depressant) - Mochida received approval in Apr. 2011
  - Co-marketing with Mochida

*Agreed to approval

**Additional Indications**

- **Kremezin** (Chronic renal failure)
  - Transferred from Daiichi Sankyo

**New Products**

- **Immunology**
- **Metabolism/cardiovascular**
- **CNS**
- **Others**

Mitsubishi Chemical Holdings Corporation
Innovation

Accelerate launch of next growth drivers

Challenge the growing markets

- Comfort
- Sustainability
- Health

Lifestyle* Information & electronics Environment Energy Healthcare

*food, water, housing, and apparel

- White LED lighting and materials
- Lithium-ion battery materials for HEVs
- Performance composite materials**
- OPV modules and materials
- Organic photo semiconductor
- Sustainable resources
- Advanced performance products
- Agribusiness solutions
- Healthcare solutions

**chemical components for vehicles

Timeline

2020

Mitsubishi Chemical Holdings Corporation
Health Care Solutions

Deliver solutions for disease treatment and prevention to meet new medical needs

- Diagnostic biomarkers
- Artificial CO₂ spa generator
- RO water treatment
- Medical gas
- Photovoltaics and batteries e.g. emergency power supply for hospitals
- White LEDs for medical applications
- Pharmaceuticals for unmet medical needs
- Medical IT analysis e.g. epidemiological data to health insurer by collaboration with NTT DATA
- Taiyo Nippon Sanso
- MCHC Group Health Care Businesses
- MTPC
- Data
- MCM/MCC
- MCM
- MCC
- MCC/MPI
- MRC

Mitsubishi Chemical Holdings Corporation
Deliver KAITEKI through concerted group efforts focused on new plant cultivation systems.

Water, light, CO₂

Creating next generation solutions with vegetable

Develop water efficient agricultural systems
(TKI's joint research with the State Government of Victoria, Australia and Mebiol)

Enable cultivation in non-arable land

Deliver plant cultivation systems

Produce value-added plant derived products

Solar-powered next generation vegetable factory

Container vegetable factory

Inside of the container vegetable factory

LED system (Optimization under study)

BIPV: Building integrated PV

MKV DREAM “Naeterace” - seeding terrace system

Roof: Crystalline type
Walls: Amorphous type and BIPV

 watertight sheet

Artificial soil

Sprinkle on top

Nonwoven cloth

Ground

Sprinkle at top

Hydro membrane

Nonwoven cloth

Watertight sheet

Fertilization drip-feed tube (Connected to a supply device)

Innovation-2

Agribusiness Solutions

Mitsubishi Chemical Holdings Corporation
Customers are evaluating suitability for mass production

Accelerate commercialization of GS Pla (polybutylene succinate) with business partners (Target 20k tons production in Thailand by 2015)

Bio-succinic acid
'11/4 Partnership with BioAmber (US)

Bio-1.4BG
'11/4 Partnership with Genomatica (US)

GS Pla
'11/3 Established JV with PTT (Thailand)

Develop market for DURABIO (isosorbide polymer)
Establish market presence as high performance products based on optical characteristics and/or weather resistance
Target 20k tons in sales by 2015

Materials derived from plant life

DURABIO
'10/8 Launched pilot plant

Materials derived from plants

Customers are evaluating suitability for mass production

Automotive
Optical parts components
FPD parts

Mitsubishi Chemical Holdings Corporation
Grow, Innovate and Leap Ahead by orchestrating the Group strengths
## APTSIS 15 Goals 2015

### APTSIS 15 goals remain unchanged

**Targets for enhancing corporate value**

<table>
<thead>
<tr>
<th>Economic Indexes</th>
<th>FY2012</th>
<th>FY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating income</td>
<td>¥230.0 billion</td>
<td>¥400.0 billion</td>
</tr>
<tr>
<td>- Growth &amp; Innovation Strategies</td>
<td></td>
<td>¥330.0 billion</td>
</tr>
<tr>
<td>- Leaping ahead (M&amp;A)</td>
<td></td>
<td>¥70.0 billion</td>
</tr>
<tr>
<td>ROA (income before income taxes/total assets)</td>
<td>≥ 8%</td>
<td></td>
</tr>
<tr>
<td>Net debt-to-equity ratio</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Overseas sales ratio</td>
<td></td>
<td>≥ 45%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MOS Indexes (Major instances)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sustainability Index</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Environmental impact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- reduce by 30% (Japan) vs. FY2005</td>
<td>(17% reduction of GHG)</td>
<td></td>
</tr>
<tr>
<td><strong>Health Index</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Index derived by the degree of difficulty to treat diseases &amp; the number of administered patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- increase by 30% vs. FY2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comfort Index</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- New products ratio in the Performance Product &amp; Health Care domains</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ≥35%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Categorized by profitability, market presence and attractiveness

- Performance Products
- Health Care
- Industrial Materials

**Next-generation Growth Business (6)**
- Organic photovoltaic modules and materials
- Organic photo semiconductors
- Advanced performance products
- Agribusiness solutions
- Healthcare solutions
- Sustainable resources

**Growth Business (11)**
- White LED lighting and materials
- Lithium-ion battery materials
- FPD components
- Performance composite materials
- High performance molding products
- Specialty chemicals
- Water treatment system and services
- Pharmaceuticals
- High performance graphite
- Performance polymers
- MMA/PMMA

**Business to be restructured (15)**
- Naphtha crackers, etc.

**Cash-generating Business (18)**
- Recording media
- Performance films
- Food ingredients
- Diagnostics & support for new pharmaceutical development
- Terephthalic acid
- Coke
- PHL/BPA/PC
- PP
**APTSIS 15 Strategies**

Grow, innovate, and leap ahead by orchestrating the Group strengths

<table>
<thead>
<tr>
<th>Strengthening Fundamentals</th>
<th>Generate synergies, improve financial position, and reform business structure</th>
</tr>
</thead>
</table>
| **Growth Strategy**         | • Accelerate transformation to deliver high-performance products and high-value-added businesses  
                              | • Expand green businesses  
                              | • Develop new medicines to fulfill unmet medical needs  
                              | • Operate globally |
| **Innovation Strategy**     | Build new businesses for the future |
| **Leaping Ahead (M&A)**     | Invest strategically in alliances and acquisitions |

Deliver KAITEKI solutions by pursuing Sustainability, Health, and Comfort
**APTSIS 15** Profit Structure toward 2015

Shift to high-performance products and high-value-added business portfolio

Remain unchanged from the original plan announced on Dec. 8 2010.

FY2011 forecast

- **Net sales**: ¥3.6 trillion
- **Operating Income**: ¥400.0 billion including ‘Leaping Ahead (M&A)’
- **Industrial Materials**: ¥98.0 billion
- **Performance Products**: ¥40.0 billion
- **Health Care**: ¥72.0 billion

Initial year in **APTSIS 15**

**FY2011 forecast**

Final year in **APTSIS 15**

**FY2015**

- **Net sales**: ¥5.0 trillion
- **Leaping Ahead**: ¥206.0 billion

Mitsubishi Chemical Holdings Corporation
Business Frameworks

Restructure and reframe some businesses in the beginning of FY2013 with a leaping ahead strategy in mind

Step 1
FY2011/June

Step 2
FY2012/E

Restructure and reframe some businesses in the beginning of FY2013 with a leaping ahead strategy in mind

Current MCHC Group

MCC
- Petrochemicals
- Information & Electronics
- Performance Chemicals
- Carbon
- Health Care

MTPC
- Pharmaceuticals
- Performance Films
- Environment & Lifestyle
- High Performance Molded Products
- MMA chain
- Carbon fiber
- AQUA

MPI
- IT
- Purchasing
- Engineering

MRC
- Film Forming
- Composites

Synergy units (example)

Markets
- AQUA
- Sp.Chem.
- PTA

Product chains
- MMA/PMMA
- Carbon
- PHL/BPA/PC

Technology
- Film Forming
- Composites

Function
- IT
- Purchasing
- Engineering

Geographical area
- ASEAN
- China
- North America
- Europe

Reorganization of production sites

Leap ahead Strategy

Realize Orchestrating

New MCC

New MTPC

New MPI

New MRC
### Cost and RD Synergies

#### Start various projects to realize synergies

<table>
<thead>
<tr>
<th>Area under study</th>
<th>Remarks</th>
<th>FY2011</th>
<th>FY2013</th>
<th>FY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Purchasing</strong>&lt;br&gt;(23)</td>
<td>Set up office to prepare an equipment (&amp; materials) procurement center</td>
<td>Preparations office activities</td>
<td>Launch procurement center</td>
<td></td>
</tr>
<tr>
<td><strong>2) Logistics</strong>&lt;br&gt;(5)</td>
<td>Start logistics efficiency project</td>
<td></td>
<td></td>
<td>Transition</td>
</tr>
<tr>
<td><strong>3) IT units</strong>&lt;br&gt;(3)</td>
<td>Integrate group IT companies</td>
<td></td>
<td></td>
<td>Transition</td>
</tr>
<tr>
<td><strong>4) RD units</strong>&lt;br&gt;(0.5)</td>
<td>Integrate MCC &amp; MRC biotech research labs</td>
<td>Integration in July</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>remarks</th>
<th>FY2011</th>
<th>FY2013</th>
<th>FY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Purchasing</strong>&lt;br&gt;(23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2) Logistics</strong>&lt;br&gt;(5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3) IT units</strong>&lt;br&gt;(3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4) RD units</strong>&lt;br&gt;(0.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Four operating companies**<br>Strengthen ties<br>Equipment (＆materials) procurement center (work functions)<br>MCHC Group<br>Group synergy office (in charge of procurement)<br>Integrated operations

**Engineering and equipment companies**

**Integration** Planned

**IT company**
Introduction of “Four Dimensional Management” and “Management of SUSTAINABILITY”

Proposal of “Management of SUSTAINABILITY” (MOS Axis)

Sustainability Index
- Contribution to reduce environmental impact through products & services
- Practice energy saving & reduction of depletion resources
- Contribution to reduce environmental impact through supply chain management

Health Index
- Contribution to medical treatment
- Contribution to improvements of QOL
- Contribution to early detection and prevention of diseases

Comfort Index
- Deliver products (development and manufacturing) for comfortable lifestyle
- Improve stakeholder satisfaction
- Recognition of corporate trust

*Examples of MCHC’s MOS Indexes

MOS Indexes*  
CSR GHG

Public Interest, Environment

CFO

New Concept for Management

CEO

Timeline

MOT (Management of Technology)

CTO

Innovation

Technology Management Axis

Business Administration Axis

MOS (Management of SUSTAINABILITY)

Crisis of Financial Capitalism (2008)

Shareholder Capitalism

Capital Efficiency ROE Management

Mitsubishi Chemical Holdings Corporation

Stakeholder Capitalism
APTSIS 15  Portfolio Management

Categorized by profitability, market presence and attractiveness

- Performance Products
- Health Care
- Industrial Materials

**Next-generation Growth Business (6)**
- Organic photovoltaic modules and materials
- Organic photo semiconductors
- Advanced performance products
- Agribusiness solutions
- Healthcare solutions
- Sustainable resources

**Growth Business (11)**
- White LED lighting and materials
- Lithium-ion battery materials
- FPD components
- Performance composite materials
- High performance molding products
- Specialty chemicals
- Water treatment system and services
- Pharmaceuticals
- High performance graphite
- Performance polymers
- MMA/PMMA

**Business to be restructured (15)**
- Naphtha crackers, etc.

**Cash-generating Business (18)**
- Recording media
- Performance films
- Food ingredients
- Diagnostics & support for new pharmaceutical development
- Terephthalic acid
- Coke
- PHL/BPA/PC
- PP

Today’s topics
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration
- MCHC Group overview
- Kashima Plant: Petrochemical business overview

APTSIS 15 (FY2011-FY2015)
- Summary of APTSIS 10
- Management challenges under APTSIS 15
- Specific reforms in and progress of APTSIS 15

APTSIS 15 Business Topics
- MMA/PMMA, Carbon fibers and composite materials (Performance composite materials)
- Lithium-ion battery materials, White LED lighting and materials, OLED (Organic photo semiconductor), Organic photovoltaic modules and materials
MMA/PMMA

Introduction of MMA chain and its business strategies
### Broadening Applications in the MMA Chain

<table>
<thead>
<tr>
<th>Business</th>
<th>Product</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemicals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMA monomer</td>
<td>Acrylic resin pellets</td>
<td></td>
</tr>
<tr>
<td>Methacrylic acid</td>
<td>Paints and more</td>
<td></td>
</tr>
<tr>
<td>Methacrylic esters</td>
<td>Paints and more</td>
<td></td>
</tr>
<tr>
<td><strong>Plastics</strong></td>
<td>Acrylic resin pellets</td>
<td>Tail lights, light-guiding panels, home appliances</td>
</tr>
<tr>
<td>Acrylic sheets</td>
<td>Signboards, light-guiding panels, water tanks, bath tubs</td>
<td></td>
</tr>
<tr>
<td>Rod lenses arrays</td>
<td>Printers, Fax machines</td>
<td></td>
</tr>
<tr>
<td>Optical fibers</td>
<td>Automotive harnesses and more</td>
<td></td>
</tr>
<tr>
<td><strong>Coating resins and Modifiers</strong></td>
<td>Coating resins</td>
<td>Coatings for automobiles and ships</td>
</tr>
<tr>
<td>Plastic modifiers</td>
<td>Materials for enhancing the processability of plastics</td>
<td></td>
</tr>
<tr>
<td>Acrylic films</td>
<td>Surface materials for construction materials, automotive interiors and exteriors and more</td>
<td></td>
</tr>
</tbody>
</table>
### Positioning of the MRC Group

**A leading global company with a broad range of product families**

#### Business comparison of major MMA monomer producers

<table>
<thead>
<tr>
<th>Company</th>
<th>Mono</th>
<th>Homo</th>
<th>Copoly</th>
<th>MRC Japan</th>
<th>A Germany</th>
<th>B US</th>
<th>C France</th>
<th>D Japan</th>
<th>E Japan</th>
<th>F Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMA</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Methacrylic Acid</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methacrylic Esters</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>△</td>
<td>×</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrylic resin pellets</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrylic sheets</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrylic bathtubs</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquariums</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>△</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical fibers</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic modifiers</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coating materials</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Films</td>
<td>○</td>
<td>×</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artificial marble</td>
<td>○</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>○</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**O**: Commercialized  △: Partially commercialized  ×: No businesses

(MRC estimates)
MMA/PMMA: Strategies

Accelerate both business globalization and the shift to high-performance businesses
- Development in line with Growth Strategies in the Performance Products and Industrial Materials domains

**MMA monomer:**
- Expand production capacity capturing rising demand and optimize global sites.
- Global market share: 38% → 45% (‘15)
  [Increase capacity: Thailand (‘11), US (‘11), S. Korea (‘13), Saudi Arabia (‘14)]

**PMMA:**
- Develop and expand as high-performance growth driver (e.g. FPD applications).
- Secure more than 60% share in light guide plate applications as MMA product chain.
- Expand sales of high-performance sheets (e.g. Anti-fingermark, Anti-reflection)

**MMA/PMMA**

Global top

Net sales
‘10 → ’15 Target
270.0 → 430.0
(Billions of Yen)
MMA/PMMA: Global Expansion

Progress in accelerating globalization
Steady progress underway toward reaping results in 2015

Middle East: Deepen relationships with key players
- Execute α Project
  - Business tie-up in Saudi Arabia
    MMA monomer: 250,000t; PMMA: 40,000 t
    Target 2014 launch

North America: Ramp up production capacity again to meet growing demand
- Increase chemicals capacity and re-expand production capacity
  - Increase MAA (methacrylic acid) capacity
  - Expand production capacity for producing acrylic resin plates for light guide plates
  - Resume production on dormant MMA line

Asia: Capture growing demand and strengthen competitiveness
- Expand business in Asia
  - Ramp up in MMA growth areas
    - Increase MMA monomer capacity (Thailand, Korea)
    - China: Expand continuous cast plate line
    - Korea: Increase PMMA capacity

2011 MMA in THAI
- 90,000t

2012 PMMA in KOREA
- 60,000t
2013 MMA in KOREA
- 98,000t

2014 MMA in M-EAST
- 250,000t
2014 PMMA in M-EAST
- 40,000t

2011-2012 MMA Re-Start in Beaumont
- 23,000t
2013 MAA in Beaumont
- 23,000t

MMA/PMMA: Global Expansion

Mitsubishi Chemical Holdings Corporation
MMA Monomer: Global Supply and Demand

Global demand for MMA monomer growing 4-6% per annum
Increase supply capacity as global top supplier

MRC-SABIC
Middle East Project
Planned to launch 250k tons at the end of 2014

Thailand MMA No. 2
Launched 90k tons in Jan. 2011

Daesan MMA (Korea)
Planned to launch 98k tons in Jan. 2013

Fulfill supply responsibility as the top supplier to meet growing demand

MMA/PMMA

Mitsubishi Chemical Holdings Corporation
MMA/PMMA

Where We Want to Be in 2015 and Our Strategy to Get There

Leverage global No. 1 production capacity and competitiveness to establish a powerful MMA chain worldwide

Where We Want to Be in 2015 and Our Strategy to Get There

Global Top FY2010

Increase MMA capacity 30-40% in strategic areas FY2015

Dominant player in MMA product chain

MMA Consumption by MRC
(As a percentage of production capacity)

MMA monomers
Acrylic resin
Internal consumption

Management integration with Lucite
Steady ramp-up in MMA monomer capacity
Add PMMA capacity to create a strategic balance in product chain

Mitsubishi Chemical Holdings Corporation
### Overview

<table>
<thead>
<tr>
<th>Company name</th>
<th>Saudi Methacrylates Company, LLC (tentative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Al Jubail, Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td>Capacity</td>
<td>MMA monomer: 250kt/y (New ethylene method)</td>
</tr>
<tr>
<td></td>
<td>PMMA: 40kt/y</td>
</tr>
<tr>
<td>Stake</td>
<td>Mitsubishi Rayon 50%, SABIC 50%</td>
</tr>
<tr>
<td>Launch</td>
<td>End of 2014 (target)</td>
</tr>
</tbody>
</table>

#### Characteristics of the new ethylene method (C2 method)
- The world’s first commercialization by Lucite International in 2008
- Uses methanol, ethylene and carbon monoxide—feedstocks that are easy to procure.
- Simple process
- Location provides overwhelming cost advantage vis-à-vis competition
Performance composite materials

Carbon fibers and composite materials
growth strategy
Growth Strategy

Expand performance and value-added businesses
Capacity increases in step with a rapidly expanding carbon fiber market

Global carbon fiber market
30,000 → 70,000t/y (2015 estimate)

MCHC Group carbon fiber capacity increase
PAN-based (MRC) 7,400 → 13,800t/y (2015)
Pitch-based (MPI) 1,000 → 1,450t/y (2015)

Demand forecasts (by application)

Growing industrial applications
- Wind power: 16,500
- Automotive: 5,000
- Other: 20,500
Integrated production regime from AN through precursors, carbon fibers and composite materials

Overwhelming supply capacity and cost competitiveness in precursors
Integrated production from coal tar through carbon fibers and composite materials
Overwhelming supply capacity and cost competitiveness in highly elastic carbon fiber

Mitsubishi Chemical Holdings Corporation
Synergy Creation

Generate higher performance products leveraging the Group’s materials and molding technologies

* Combine the strengths of PAN-based carbon fiber (high strength, high modulus) and pitch-based carbon fiber (high rigidity, low thermal expansion, high heat conductivity)
* Develop thermoplastic carbon fibers
* Develop parts with carbon fibers
* Expand globally—leverage Quadrant’s European footprint
* Strengthen integrated operations—alliances and M&A

Materials

- M C C
  - Olefin resins
  - Engineering plastics
  - Elastomers

- M R C
  - Precursors
  - PAN-based carbon fibers
  - Carbon fiber reinforced plastics

- M P I
  - Pitch-based carbon fibers
  - Glass fiber/PP composite materials
  - Carbon fiber reinforced plastics

Environmentally friendly applications

- Automotive
- Windmill

Technological development attuned to materials
- Develop composite materials
- Develop molding technologies

Global expansion
- Leverage Quadrant footprint
## Measures to Reach Where We Want to Be in 2015

Expand to performance composite materials and molding materials

<table>
<thead>
<tr>
<th>Coordinate a three-pronged approach mobilizing precursors, carbon fibers and prepregs to expand our business domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Launch industrial high-performance carbon fiber (large tow) in June 2011 and plan next capacity increase</td>
</tr>
<tr>
<td>- Strengthen precursor strategy (MRC-SGL Precursor and others)</td>
</tr>
<tr>
<td>- Strengthen synergies between pitch- and PAN-based carbon fibers and composite materials</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>- Collaboration between MRC, MPI, MCC and Quadrant</td>
</tr>
<tr>
<td>- Develop composite materials for automotive structural parts and supply automotive components</td>
</tr>
<tr>
<td>- Establish competitive advantages in intermediate materials and processing technologies</td>
</tr>
<tr>
<td>- Leverage M&amp;A to expand business chain</td>
</tr>
</tbody>
</table>

Mitsubishi Chemical Holdings Corporation
Carbon Fibers and Composite Materials

Carbon Fibers That Fulfill KAITEKI

- Destruction of earth's environment
- Depletion of natural resources
- Government policies

- Renewable energy
- Alternative energy
- Energy conservation
- Environmental recovery
- Natural resource development
- Natural resource conservation

- Power generation using wind, waves and sea currents
- Fuel cells
- Natural gas
- Nuclear power
- Lighter transportation (airplanes, automobiles, ships, etc.)
- Storage batteries
- Smart grid
- Water purification
- Deep-sea development
- Offshore development
- Underground development
- Repair and reinforcement of building structures
- Large-scale structures

Mitsubishi Chemical Holdings Corporation
Impact of the Great East Japan Earthquake on Our Operations and Progress in Restoration
- MCHC Group overview
- Kashima Plant: Petrochemical business overview

APTSIS 15 (FY2011-FY2015)
- Summary of APTSIS 10
- Management challenges under APTSIS 15
- Specific reforms in and progress of APTSIS 15

APTSIS 15 Business Topics
- MMA/PMMA,
  Carbon fibers and composite materials (Performance composite materials)
- Lithium-ion battery materials,
  White LED lighting and materials,
  OLED (Organic photo semiconductor),
  Organic photovoltaic modules and materials
Lithium-ion battery materials
MCC’s Lithium-ion Battery Materials

Expand sales and market share in automotive applications

Automotive Market Forecasts
Electrolytes and Anodes

2015 share targets
Electrolytes: 40%
Anodes: 35%

- **Our strengths in electrolytes**
  Technologies in organic synthesis to develop functional additives that enhance EV’s power output and battery life.

  Alliances with suppliers (such as Stella Chemifa) to strengthen the supply chain from procurement to customer delivery.

- **Strengths of anodes**
  Technologies to control graphite structure to achieve rapid charging performance and long battery life for EVs.

  Integrated supply chain from the procurement of spherical graphite in China to customer delivery.

(Lithium-ion battery materials)
Electrolytes 10,000t/y (2011 3Q)
Stockton-on-Tees, UK
(On the premise of Cassel plant of Lucite International)

Lithium salt
Feasibility study with Stella Chemifa in Europe

Electrolytes 10,000t/y (2012 1Q)
Memphis, Tennessee, US
(On the premise of Memphis plant of Lucite International)

Lithium salt
Feasibility study with Stella Chemifa in the US

Electrolytes (solution) 13,500t/y (2011 4Q)
Anode materials 7,000t/y (2011 2Q)
Cathode materials 2,200t/y
Separator 12,000km²

Total targeted capacity by 2015
- Electrolytes (solution) 50,000t/y
- Anode materials 35,000t/y
- Cathode materials 15,000t/y
- Separator 72,000km²

Mitsubishi Chemical Holdings Corporation
Lithium-ion Battery Materials Market Forecast

Rapid growth is expected in automotive and stationary markets in 2015 and forward

(Billions of Yen)

Leverage materials technologies to meet the market needs

Four key LiB materials market forecasts for:
- Stationary
- Automotive
- Compact consumer electronics
- MCC sales

Rapid expansion in stationary battery market starting around 2015

(MCC estimates, 2011)
Lithium-ion battery materials

Long Lifetime, High Safety Requirements for Stationary Battery Materials

Apply technology developed for EVs and accelerate materials innovations

Large-scale LiB for mounting on EV and PHEV

Larger capacity
Longer use
Charge/discharge cycle

Materials innovations

Application of materials technologies

Large-scale stationary LiB for residential and commercial buildings

Charge
Emergency power supply
White LED lighting and materials
OLED (Organic photo semiconductors)
White LED lighting and materials

White LEDs: Business Outlook

Global development of KAITEKI lighting by utilizing technological superiority in materials and Verbatim’s sales network
Combined sales target of ¥100.0 billion with materials and lighting/modules

- High Added Value
- White LED lighting and materials
- GaN substrates 40%
- Phosphors 50%
- Encapsulants & packaging materials 20%
- Target share in 2015

In-house materials
Mitsubishi Chemical Holdings Corporation

Modules
Lighting apparatus
Deploying LED Light Bulbs under Verbatim Brand

Japan

Start Jul. 2011
Launch four products

Europe

Start Sep. 2010
Launched 14 products

US

Start Feb. 2011
Launched five products

3-step dimmable LED light bulbs

Dim brightness to save energy

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Luminous Flux (lm)</th>
<th>Power Consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>550</td>
<td>6.8</td>
</tr>
<tr>
<td>60%</td>
<td>330</td>
<td>4</td>
</tr>
<tr>
<td>20%</td>
<td>110</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Growing market for quality lighting

White LED lighting and materials

Launch in Japan in Jul. 2011

Launch in Australia in Feb. 2011
The Way Forward for the OLED Lighting Business

- Create a new lighting world differentiated from existing lighting
- Develop coating materials
- Jointly develop coating process with Pioneer
- Cut costs substantially with coating technology and fully commercialize in 2014

**OLED Lighting**
- Thin and lightweight surface emission
- Soft light with less glare
- Touchable surface with low heat generation

**Mass Production** (Jul. 2011)

**OLE1**
- Vapor deposition-based (Coating under layer)
- OLED lighting
- Increasing of the brightness and the luminous efficiency
- Variety of whites from cool to warm

**OLE2**
- Coating type OLED lighting
- Low Cost (for large panels with fast performance) on new production line

**Establish a joint marketing business entity with Pioneer (under study)**

**Sales target** ¥30.0 billion

- 2013
- 2014
- 2015

**“Milano Salone 2011” (April 2011)**

Lighting design: Uchihara Creative Lighting Design Inc.
Organic photovoltaic modules and materials
Organic photovoltaic (OPV) modules and materials

Marketing for Photovoltaic Modules

2011 2012 2013 2014 2015

Construction materials

Lightweight/thin film/flexible

Printing/design/3D

Organic thin film

Daily sundries

Construction materials

- Roofs
- Exterior walls
- Waterproofing
- Curved surface
- Passenger vehicles (EVs)

Automotive

- Trucks and buses
- KDDI base station (Kochi Prefecture)

Systems

- Industrial and public sectors
- Plant factory

웃Using a-Si thin film cells, incorporation into construction materials (BIPV), and development of automotive products (AIPV).

Now growing a market for the gioa brand.

BIPV: Building integrated PV  AIPV: Automobile integrated PV

Mitsubishi Chemical Holdings Corporation
Organic photovoltaic (OPV) modules and materials

High Performance Milestones

The world’s best performance as organic thin-film type

Latest data >10%

Layer formation (tandem)

Efficiency 12%

Launch OPV onto the market by FY2012 with efficiency improvement

present 2012

Hybrid and tandem types, n-nano materials
Zinc oxide nanorods
Semiconductor nanoparticles
Carbon nanotubes

Hybrid, Nano material, •••

Efficiency >20%

Efficiency 15%

Efficiency 20XX

2007
3.4% efficiency

BP

2008
4.9%

2009
7.4%

2010

2012

Substrate

Rear surface electrode layer

N-type SC

Combined P/N layers

P-type SC

Transparent electrode layer

Hybrid and tandem types,
n-nano materials
Zinc oxide nanorods
Semiconductor nanoparticles
Carbon nanotubes

Latest data >10%

Launch OPV onto the market by FY2012 with efficiency improvement

15cm Square Module

To develop light flexible 3D Application
by Coating and Printing Technology

Collaboration with Construction
and Automobile Makers

Rear surface electrode layer

N-type SC

Combined P/N layers

P-type SC

Transparent electrode layer

Substrate

Hybrid and tandem types,
n-nano materials
Zinc oxide nanorods
Semiconductor nanoparticles
Carbon nanotubes

Latest data >10%

Launch OPV onto the market by FY2012 with efficiency improvement

15cm Square Module

To develop light flexible 3D Application
by Coating and Printing Technology

Collaboration with Construction
and Automobile Makers

Mitsubishi Chemical Holdings Corporation