## SPECIAL ISSUE ON POLYMER MATERIAL RESEARCH AND DEVELOPMENT



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Furukawa Electric Group has been focusing to utilize its material capabilities in the areas of "Polymer", "Metal" and "Photonics" where the polymer is one of the key elements. Our company's founder, Mr. Ichibei Furukawa, developed an electric wire with the refined copper with a sheer desire to make the Japanese family life bright and to contribute to the distribution of electricity. Our unique polymer technology starting from the developing of the insulation for the insulated electric wires has been following the founder's desire as DNA and is applied to many industry areas: the automotive, the infrastructure materials, the functional industry materials, etc. to help realize a brighter society that is comfortable for living.

We pursue to provide a solution proposal product anticipating the demands of our customers, through improving both of a polymer material technology and a processing technology. Also we challenge in creating new businesses by delivering cost-effective high-performance polymer and hybrid materials with leading-edge processing technologies.

The following achievements in our polymer technology development were applied on the recent products.

A: A low cost polymer material with a high-performance

- through the technical improvement of compounding, reforming and modification.
- B: The precise control technology of adhesion between a conductor and a polymer with a treatment on a functional group.
- C: An innovative molding process technology with the competitive cost to achieve a high-performance.
- D: Expanding and promoting of a new functional foaming technology.
- E: The pursuit of an analysis technology for the lifecycle and the reliability of polymers.

This special issue on the polymer technology introduces some of our R&D results in our laboratory and the papers attached included the above item A to E.

We would like to ask readers who is thinking of a new product to make a comment or an advice whether the technologies can be applied on their products.

We would like to ask for your continuous support from now on.

### Polymer Modification and Reformulation Technology

- · High heat resistance with a cross-link
- · Low dielectric and thinner insulation for wire coating
- · Ultra low-hardness polymer material
- · Recyclable material

### Composite and Multifunctional

- Insulated rectangular magnet wire for hybrid electric vehicle (HEV)
- · Light-weight automotive wire
- Triple insulated wire

### **Cost Reduction**

- · Cable insulation and sheath material
- Optical fiber coating material
- · Power cable component
- Injection foamed material
- High injection molded product

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## Polymer Analysis Technology

- · Electrical Insulation design analysis
- Identification and quantitative analysis of compound components
- · Speculation of molecular structure
- · Polymer structure analysis

### **High-performance**

- Anti-vibration rubber material for an automotive
- Automotive wires
- · Recycled plastic cable trough
- Light-weight fireproof putty for the fire prevention
- · High flame-retardant material
- Fine foamed material

### Polymer molding and control technology

- · Foaming control
- · Ultra-precise and ultra-fast molding
- · Functional thinner film
- Metal/polymer composites
- · Interface between different materials control

Furukawa's polymer technology provided to the market