

# Development of New Polymer-bonded Materials for Power Conversion and EMI

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## Project Abstract:

Conventional magnetic materials suffer from a number of disadvantages including limited size, brittleness, high loss and high cost. Prof. Cheng and his team members successfully made use of state-of-the-art polymer-bonded magnetic materials to produce magnetic devices. In using this new method, light weight, low loss and non-brittle magnetic cores of flexible shapes and different sizes can be made. The Polymer-bonded magnetic material is composed of polymer matrices and magnetic powders which can be produced by traditional polymer processing methods. Hence, it offers significant advantages over the conventional counterparts. One of the important advantages is the ease of molding such as injection molding which can save on manufacturing costs and quality control. Also, the new Polymer-bonded magnetic material is recycled easily and good for environmental protection. This breakthrough has versatile applications in a wide range of products, including transformers and inductor components, direct-current-to-direct-current power converters, high frequency power supplies, and screening of electromagnetic wave. This project was awarded a Gold medal with mention in the Brussels Eureka 2007-the 56th World Exhibition of Innovation, Research and New Technology (November 2007) and a Silver Medal in the 16th China Invention Exhibition in 2006.

## Technologies and Features of the Product Development:

- Low cost
- Flexible in shape and size
- Non-brittle
- High power LED design
- Light weight, any power level, suitable for high frequency



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