

## Recent Developments in Magnetic Powder Core

In-Bum Jeong<sup>1</sup>, Gwang-Bo Choi<sup>1</sup>, and Tae-Kyung Lee<sup>1</sup>

<sup>1</sup>R&D Center, Changsung Corporation, Korea

### Abstract

Magnetic powder core is considered to be one of the essential parts in modern electronic devices such as power supplies, digital telecommunication equipments and automotive electronics. To satisfy the recent requirement for the miniaturization of micro-systems and portable devices, the inductors or magnetic powder cores should have reduced compact volume and high universality both in magnetic and geometric aspects. In contrast, in some application areas such as power converters, the price is also one of the important aspects to be considered. To comply with such stringent technical requirements in modern electronic industry, it is highly required to develop magnetic materials with increased frequency stability, higher saturation magnetic flux density, higher permeability and higher quality factor (Q). The magnetic alloy powders which are currently being used in PM industry are permalloy (Ni-Fe), sendust (Fe-Si-Al), iron (Fe), silicon steel (Fe-Si) and ferrous amorphous alloy powders. Recent research trends for the industrial application of soft magnetic material and magnetic powder core will be introduced in the present paper. Emphasis will be placed on the newly required properties and corresponding new PM technologies for newly emerging application fields such as hybrid electric vehicle, alternative and renewable energy systems for next generation.