

Poster-Session

Deposition of removable magnetoresistive layers for the production of powder-based printable sensors

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A scalable technological approach, called MAG4INK, is presented for the preparation of printed flexible anisotropic magnetoresistive (AMR) sensors with a sensitivity in the low field range. The combination of high quality PVD layers, utilizing the superior process control for the synthesis of ultrapure magnetoresistive material with an adjustable morphology and structure, and advanced printing technologies is the core of the MAG4INK technology. Therefore, 100 nm thin magnetic films were coated on a sacrificial layer, released by a lift-off process and processed via ultrasonic milling to powder. By using this powder to formulate printable inks and pastes for printing in combination with innovative ultra-short time annealing methods, like high-power diode laser array (HPDL) and flash lamp annealing (FLA), it is currently possible to realize sensors with a magnetoresistive effect of about 0.6 % in magnetic fields of ± 3 mT, with the goal of shifting the sensitivity into sub mT range.