An original route for the preparation of hard FePt

Hai N.H., Dempsey N.M., Veron M., Verdier M., Givord D.
Laboratoire Louis Néel, 25 Avenue des Martyrs, 38042 Grenoble Cedex 9, France; Cryolab, Faculty of Physics, Vietnam National University, Hanoi, 334, Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam; LTPCM, INPG, Domaine Universitaire, BP 75, 38402 St Martin d'Hères, France

Abstract: The preparation of FePt hard magnetic foils by an original procedure is described in this paper. The process associates cyclic co-deformation of Fe and Pt foils down to the nanometer scale (total thickness of multilayer ≈ 100 μm) followed by heat treatment in the temperature range 450-550°C. The formation of the high-anisotropy $L1_0$ FePt phase results from controlled diffusion and an ordering phase transformation. Coercivities as high as 0.9 T were measured in a VSM at room temperature following annealing at 450°C for 48 h. The coercivity of this sample was decreased by half when measured at 600 K while its energy product decreased from 100 kJ/m^3 at 300 K to 25 kJ/m^3 at 600 K.
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Correspondence Address: Givord, D.; Laboratoire Louis Néel, 25 Avenue des Martyrs, 38042 Grenoble Cedex 9, France; email: givord@grenbole.cnrs.fr
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Authors with affiliations:

- Hai, N.H., Laboratoire Louis Néel, 25 Avenue des Martyrs, 38042 Grenoble Cedex 9, France, Cryolab, Faculty of Physics, Vietnam National University, Hanoi, 334, Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam
- Dempsey, N.M., Laboratoire Louis Néel, 25 Avenue des Martyrs, 38042 Grenoble Cedex 9, France
- Veron, M., LTPCM, INPG, Domaine Universitaire, BP 75, 38402 St Martin d'Hères, France

- Verdier, M., LTPCM, INPG, Domaine Universitaire, BP 75, 38402 St Martin d'Hères, France
- Givord, D., Laboratoire Louis Néel, 25 Avenue des Martyrs, 38042 Grenoble Cedex 9, France

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