CREATION AND OBSERVATION OF DOMAIN STRUCTURES WITH A SPECIAL KERR-MICROSCOPE

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9.7 cm

A Kerr-microscope is presented, which on one hand allows to make in a conventional manner images of domains in thin films with perpendicular magnetic anisotropy. On the other hand it is possible to heat the sample locally by a focussed laser beam and make images simultaneously. In order to control the position of the laser spot on the sample and not to disturb the image of the domain structure the laser beam which is reflected from the sample is seperated from the illuminating light by a wavelenght depending beamsplitter. Therefore it is possible to write domains thermomagnetically and further to observe magnetic reorientations in film systems which can be used for magnetically induced superresolution. As a first step domains have been created thermomagnetically with different laser power and pulse duration in TbFe multilayers. These multilayers show low Curie temperatures and coercitivities below 4000 Oe close to the compensation point. Hence, these films can be heated up to T_{C} and magnetically reversed in the microscope. Films with a Terbium concentration of 23.6 % have been chosen for testing the writing process. Writing with low magnetic field leads to domains with a subdomain structure, as it has been found previously.

13.4 cm

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