

Contribution of the antiferromagnetic bulk to exchange bias in Ni/FeF₂ bilayer systems

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Most theoretical models neglect the antiferromagnetic bulk when describing the exchange bias effect. We present a series of experiments highlighting the antiferromagnetic bulk in a Ni/FeF₂ bilayer system. By bombardment with 9 keV He⁺ ions and changing penetration depths defects were created influencing the exchange bias effect. The results were confirmed by numerical simulations of the ion range and damage. Quantitative magnetic and structural characterizations were performed probing the effects of ion bombardment. It is shown that the antiferromagnetic bulk can not be neglected for a quantitative description of the exchange bias effect.

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