

## **Electron Holography of Magnetic Nanopillars**

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Magnetic nanopillars, 75 nm in diameter and 175 nm tall, have been studied using electron holography. These pillars are a possible architecture for the bits in perpendicular media. They have been well characterised in arrays using MFM, but electron holography has been used to show the magnetic structure of a one-dimensional line of pillars, in addition to the magnetic interactions between the pillars. The samples were prepared using a focussed ion beam system and the lift-out method. The possible effects of sample preparation will be discussed.

A comparison between electron holography and Lorentz microscopy data, including phase simulations of images for both techniques, will be presented. Reconstructed holographic images will be presented which were taken around a magnetisation reversal cycle. Interesting magnetic features can be seen in the reconstructed holograms during the reversal cycle including magnetic coupling between neighbouring pillars and preferential switching of certain pillars. Possible reasons for these results will be discussed.