

## A novel design strategy for nanoparticles on nanopatterns: interferometric lithographic patterning of Mms6 biotemplated magnetic nanoparticles

S. M. Bird,<sup>a</sup> O. El-Zubir,<sup>a,b</sup> A. E. Rawlings,<sup>a</sup> G. J. Leggett<sup>a</sup> and S. S. Staniland<sup>a\*</sup>

<sup>a</sup> Department of Chemistry, The University of Sheffield, Sheffield, S3 7HF, UK.

<sup>b</sup> Chemical Nanoscience Laboratories, School of Chemistry, University of Newcastle, Newcastle upon Tyne, NE1 7RU, UK.

### Supplementary information.

#### Mms6 protein

**Amino acid sequence:** MGS<sup>H</sup>HHHHHHH<sup>G</sup>ST<sup>N</sup>ENLYFQ<sup>G</sup>C<sup>C</sup>PRMGGTIWTGKG  
LGLGLGLGLGAWGPIILGVVAGAVYAYMKSRDIESAQSDEEVELRDALA

**C** : Cysteine  
**H** : Histidine purification tag  
**N** : Tobacco etch virus (TEV) cleavage site  
**G** : Wild type Mms6

**Number of amino acids:** 87  
**Molecular weight:** 8.92 kDa  
**pI:** 6.2

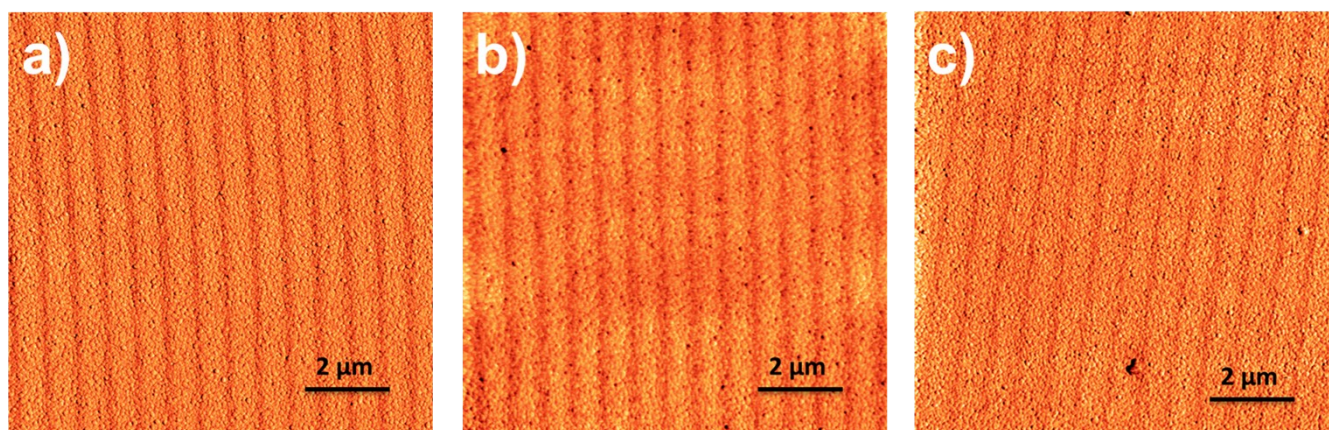
**Synthesis:** Produced in the Staniland Group following the method described in Bird *et al.*<sup>1</sup>

**Supplementary Fig. 1S** Key information on the cysteine-tagged Mms6 (cys-Mms6) protein.

---

<sup>1</sup> S. M. Bird, J. M. Galloway, A. E. Rawlings, J. P. Bramble and S. S. Staniland, *Nanoscale*, 2015, 7, 7340 - 7351.

## Friction force microscopy (FFM)



**Supplementary Fig. 2S** Friction force microscopy (FFM) images of a mixed SAM of PEG and a COOH terminated thiol formed on gold that was patterned by IL exposure at a dose of  $20 \text{ J cm}^{-3}$  (a),  $30 \text{ J cm}^{-3}$  (b) and  $40 \text{ J cm}^{-3}$  (c) and backfilled with a  $\text{CH}_3$  terminated thiol SAM to provide contrast in FFM.