

1 **SUPPORTING INFORMATION**

2 The Effect of Surface Hydrophobicity on the Function of the Immobilized

3 Biomineralization Protein Mms6

4 Xunpei Liu,^{a,b,+} Honghu Zhang,^{a,c,+} Srikanth Nayak,^{a,b} German Parada^b, James Anderegg^a, Shuren
5 Feng^{a,d}, Marit Nilsen-Hamilton^{a,d}, Mufit Akinc^{a,c} and Surya Mallapragada^{a,b,*}

6

7 ^aDivision of Materials Science and Engineering, Ames Laboratory, Ames, IA 50011, USA

8 ^bDepartment of Chemical & Biological Engineering, Iowa State University, Ames, Iowa 50011,
9 USA

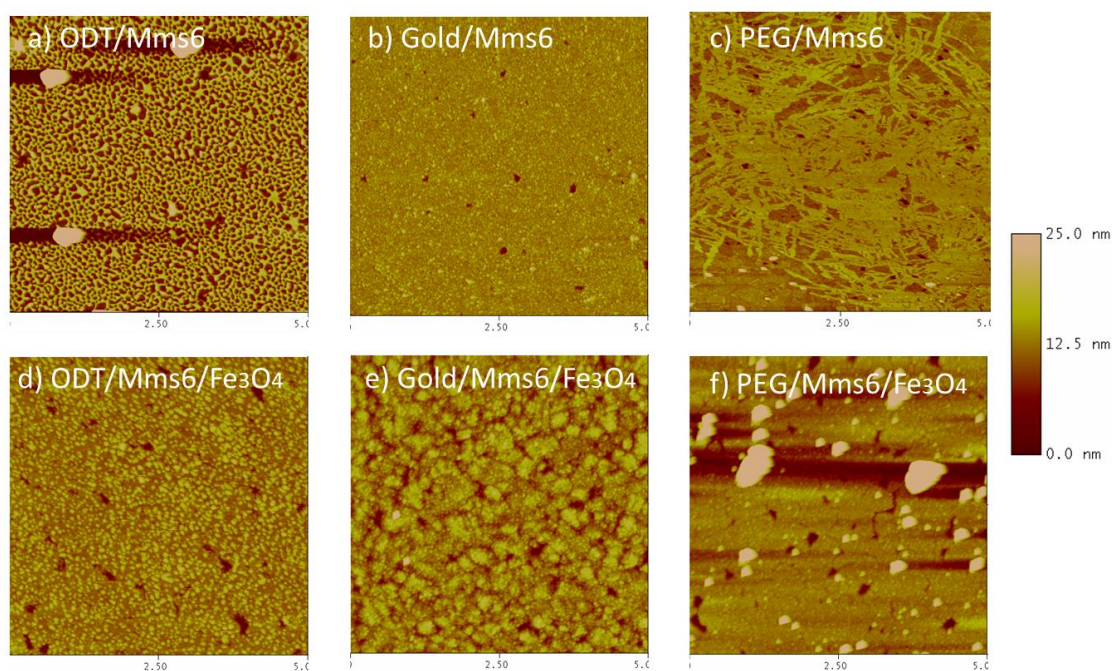
10 ^cDepartment of Materials Science & Engineering, Iowa State University, Ames, Iowa 50011,
11 USA

12 ^dRoy J. Carver Department of Biochemistry, Biophysics and Molecular Biology, Iowa State
13 University, Ames, Iowa 50011, USA

14 + Joint first authors

15 *Corresponding author: suryakm@iastate.edu

16

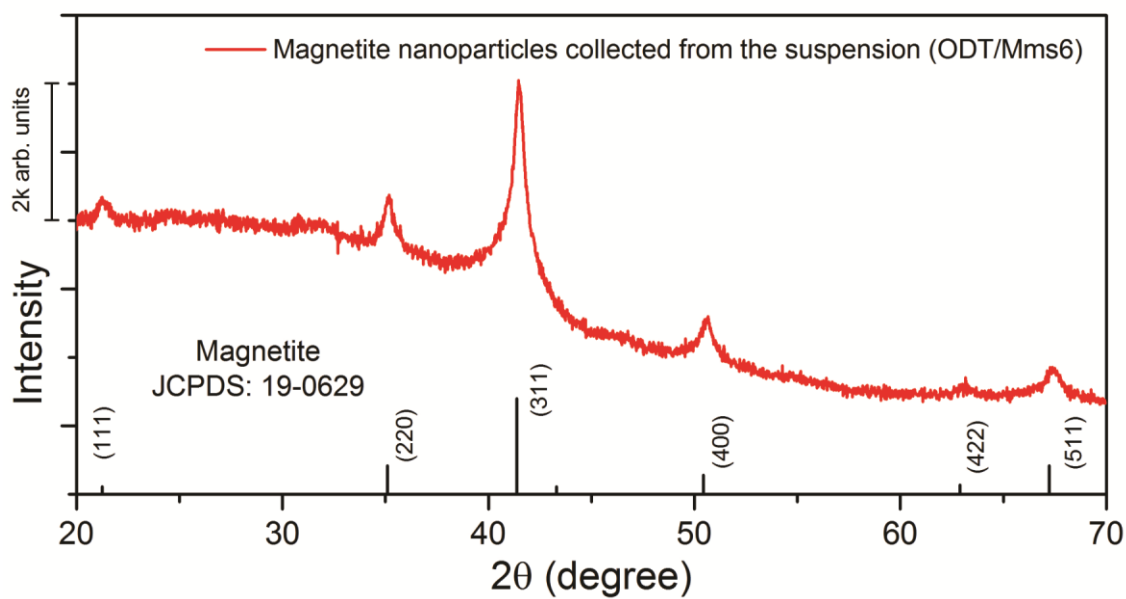


1

2 **Figure S1.** AFM scan of surfaces with Mms6 prior to magnetite nanoparticle synthesis: a) Mms6
 3 coated ODT, b) Mms6 coated gold and c) Mms6 coated PEG surfaces; and after synthesis of
 4 magnetite nanoparticles: d) magnetite grown on Mms6-ODT surface, e) magnetite grown on
 5 Mms6-gold surface, and f) magnetite grown on Mms6-PEG surface. Scan area 5 μm × 5 μm.
 6 Mms6 shows different aggregation on the surfaces with different hydrophobicities.

7

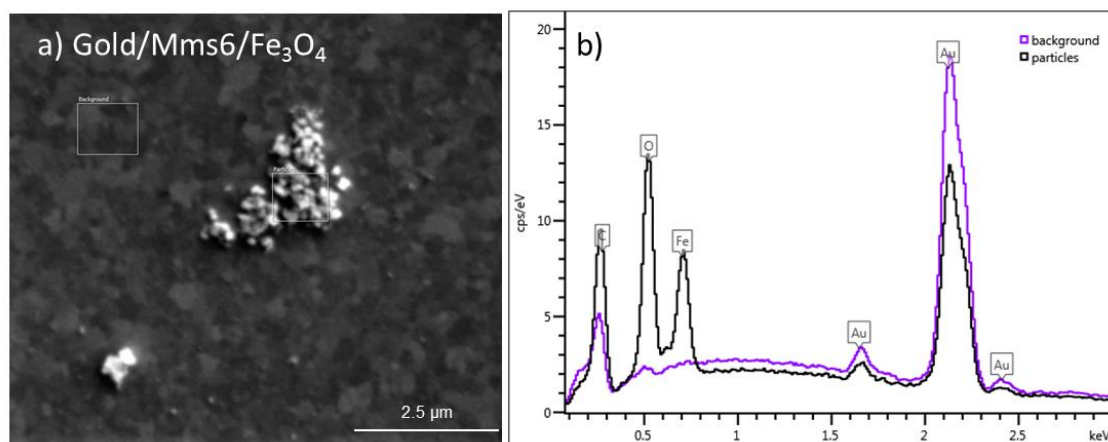
8



1

2 **Figure S2.** XRD pattern for the black precipitates collected from suspension in the Mms6-ODT
3 surface sample.

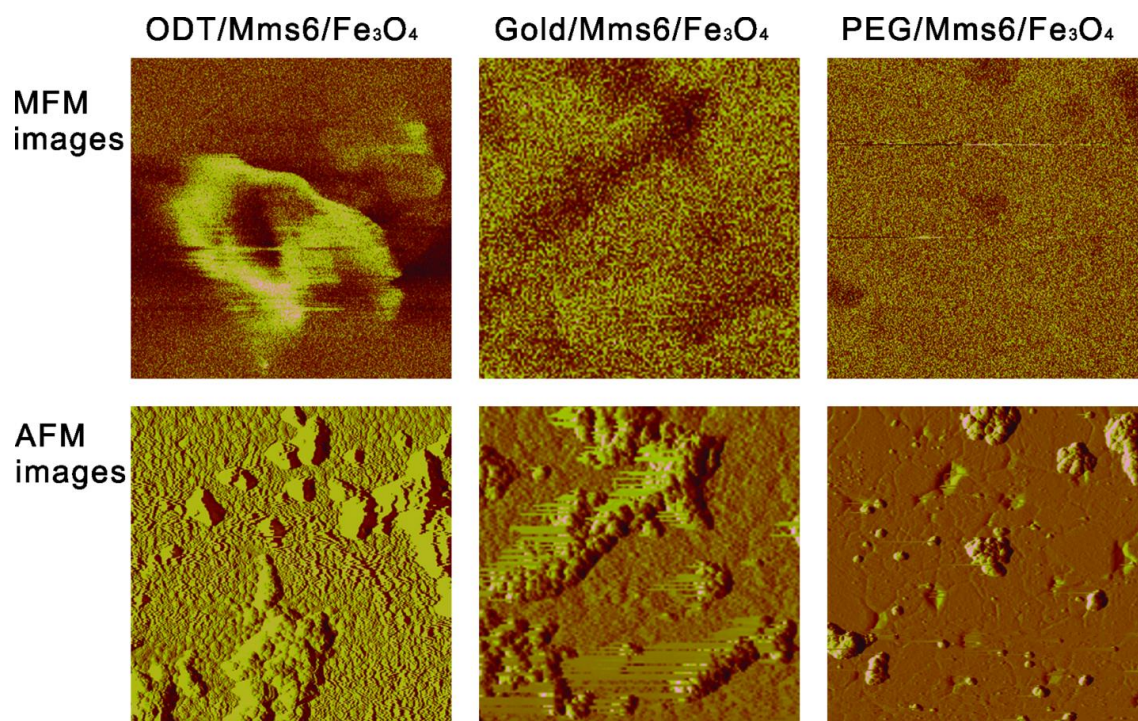
4



1

2 **Figure S3.** SEM image (a) and EDS analysis (b) of magnetite grown on Mms6 coated gold
3 surface without ODT coating.

1



2

3 **Figure S4.** AFM and MFM scans in the same area of surfaces with magnetite nanoparticles
4 grown on Mms6 coated surfaces: ODT, gold and PEG surfaces. Scan area 3 μm \times 3 μm .

5

6