

Electronic Supplementary Information

The Synergistic Mechanism of Phytic Acid Monolayers and Iodide Ions for Inhibition of Copper Corrosion in Acidic Media

Shu Shen, Cheng-di Zhu, Xiao-yu Guo, Chuan-chuan Li, Ying Wen, Hai-Feng Yang*

Department of Chemistry, Shanghai Key Laboratory of Rare Earth Functional Materials, Shanghai Normal University, 100 Guilin Road, Shanghai 200234, People's Republic of China.

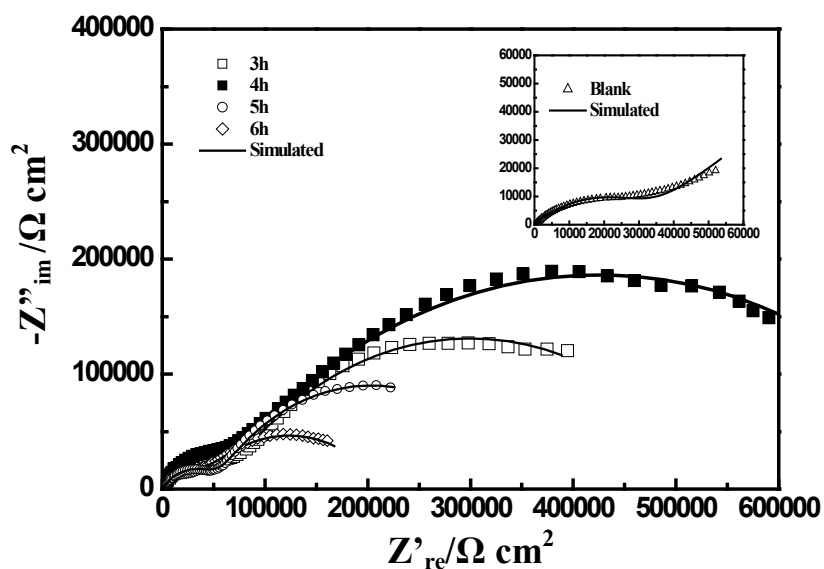


Figure S1. Nyquist plots of copper electrodes in 0.5 M H₂SO₄ solution with PA films formed from 0.1mM concentration of PA solution for different time.

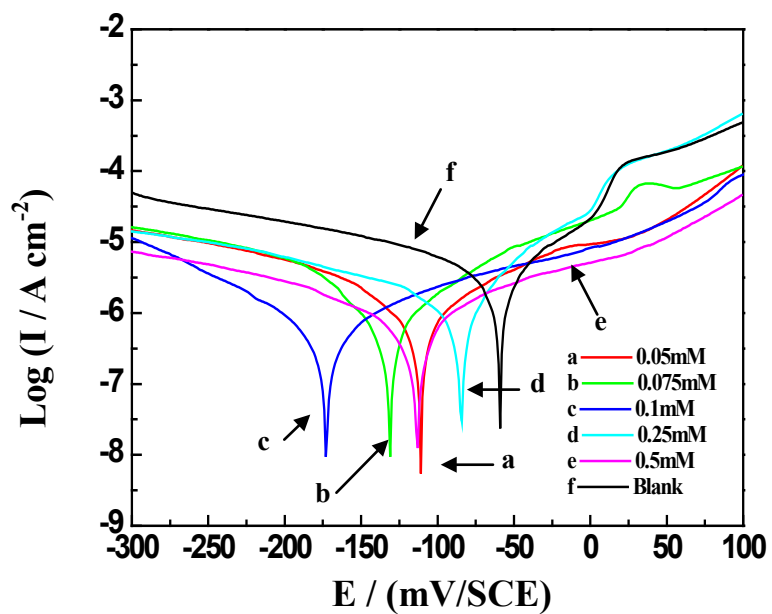
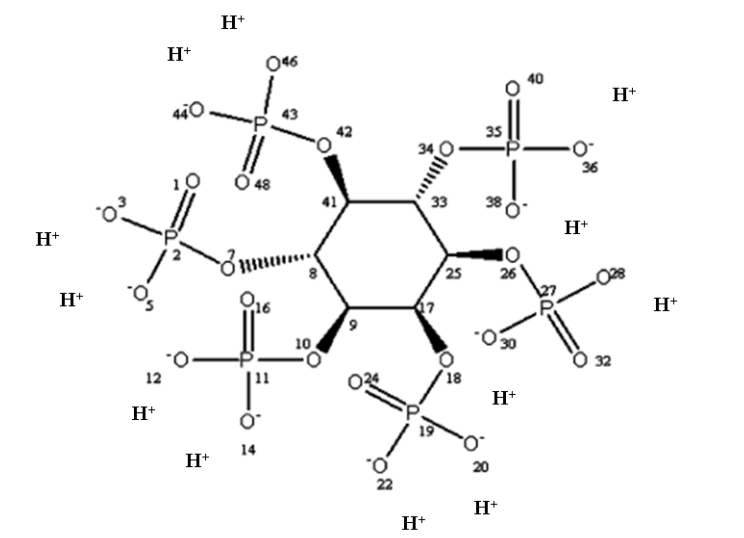


Figure S2. Potentiodynamic polarization curves in 0.5 M H_2SO_4 solution for blank copper electrode and the presence of PA SAMs formed in different concentrations of PA solution for 4 h.



Scheme S1 Structure of Phytic acid.

Table S1. EIS data of copper electrodes in 0.5 M H₂SO₄ solution with PA films formed from 0.1mM concentration of PA solution for different time.

Time (h)	R _s (Ω cm ²)	Q _d (μY ⁿ)	n	R _{ct} (kΩ cm ²)	Q _r (μY _r ⁿ)	n	R _f (kΩ cm ²)	W (μΩ cm ²)	η (%)
Blank	489.3	1.101	0.8	112.28				0.1142	
3h	614.8	0.3433	0.73	72.7	5.995	0.64	463.2		79.0
4h	300	0.2017	0.77	72.41	2.692	0.59	652.0		84.5
5h	230.5	0.8982	0.81	60.11	0.1513	0.80	295.6		68.4
6h	380.2	1.374	0.65	50.47	0.124	0.62	230.2		60.0

^aThe dimensions are S; sⁿ/cm²; if n = 1, they are F cm⁻²

Table S2. Potentiodynamic polarization parameters in 0.5 M H₂SO₄ solution for blank copper electrode and the presence of PA SAMs formed in different concentrations of PA solution for 4 h.

concentration (mM)	-E _{corr} (mV)	I _{corr} (μA cm ⁻²)	η (%)
Blank	59	166.8	
0.05	111	69.01	58.6
0.075	131	52.71	68.4
0.1	173	27.87	83.3
0.25	84	47.71	71.4
0.5	113	45.25	72.9