Electronic Supplementary Material (ESI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2015

Electronic Supplementary Information

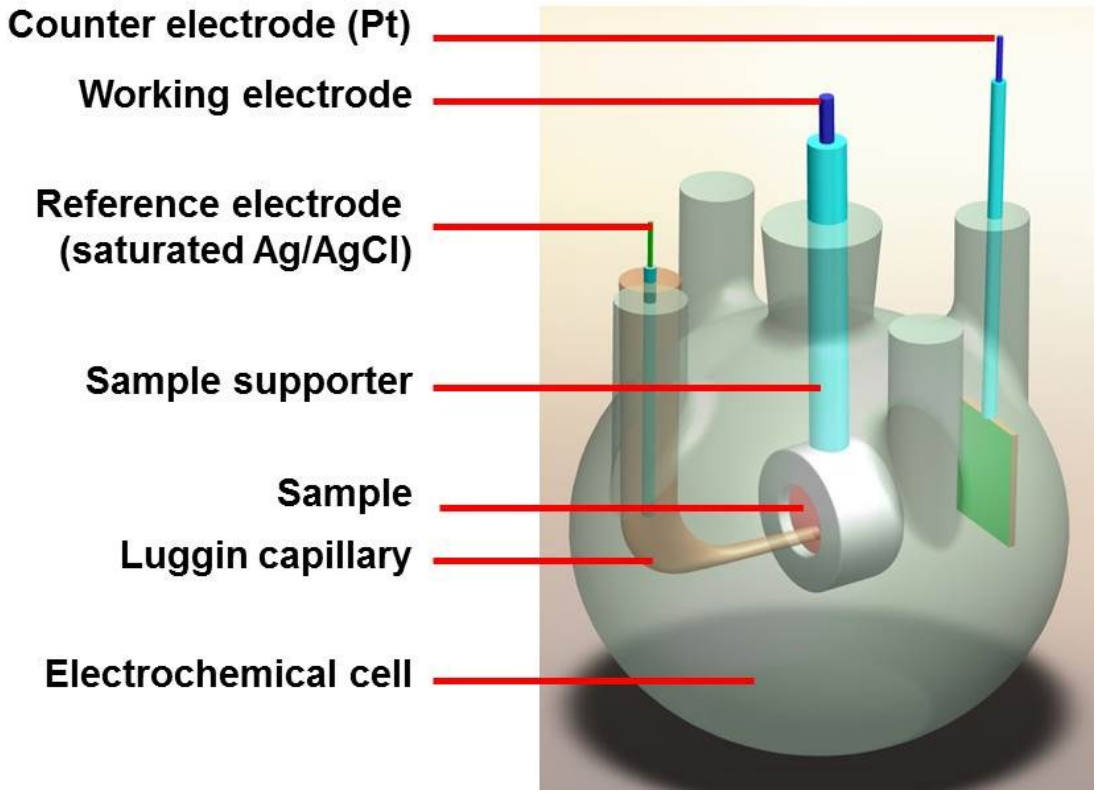
Ni-P synergetic deposition: electrochemically deposited high active Ni as catalyst for chemical deposition

Quanyao Yu[1, 2], Zhixiang Zeng[1*], Yu Liang[1], Wenjie Zhao[1*], Shusen Peng[1], Zhiyue Han[1], Gang Wang[1], Xuedong Wu[1], Qunji Xue[1]

[1] *Key Laboratory of Marine Materials and Related Technologies, Zhejiang Key Laboratory of Marine Materials and Protective Technologies, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, 315201, PR China;*

[2] *University of Chinese Academy of Sciences, Beijing, 100039, PR China.*

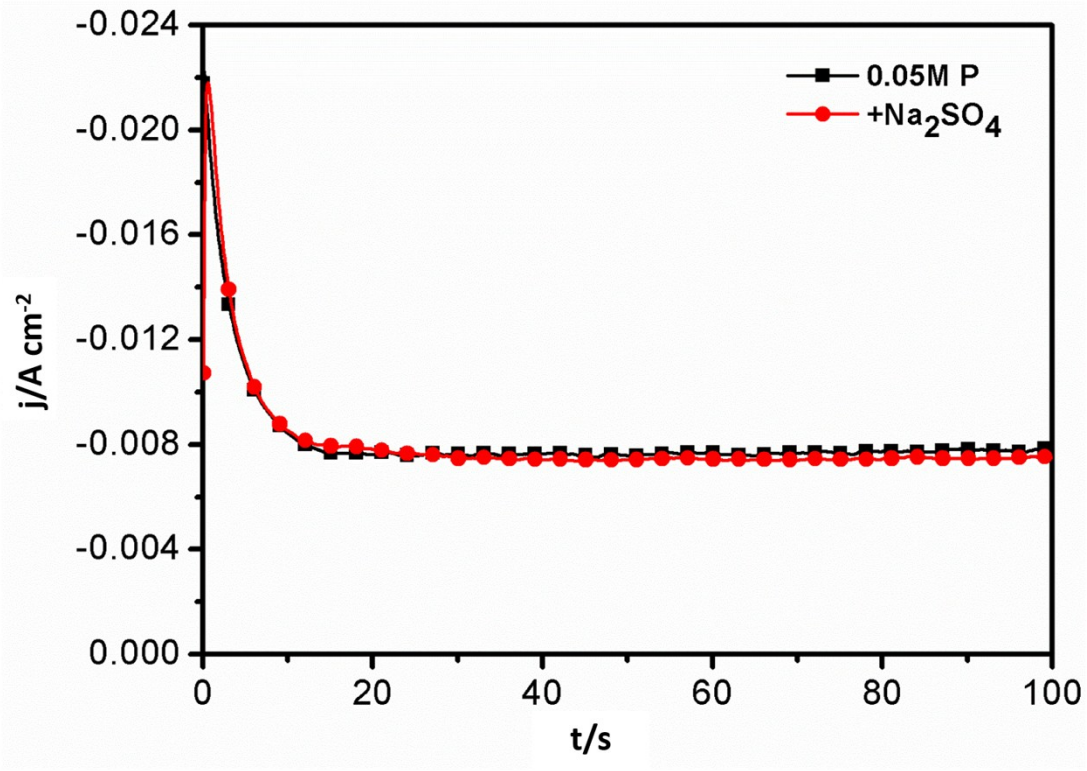
Table of content



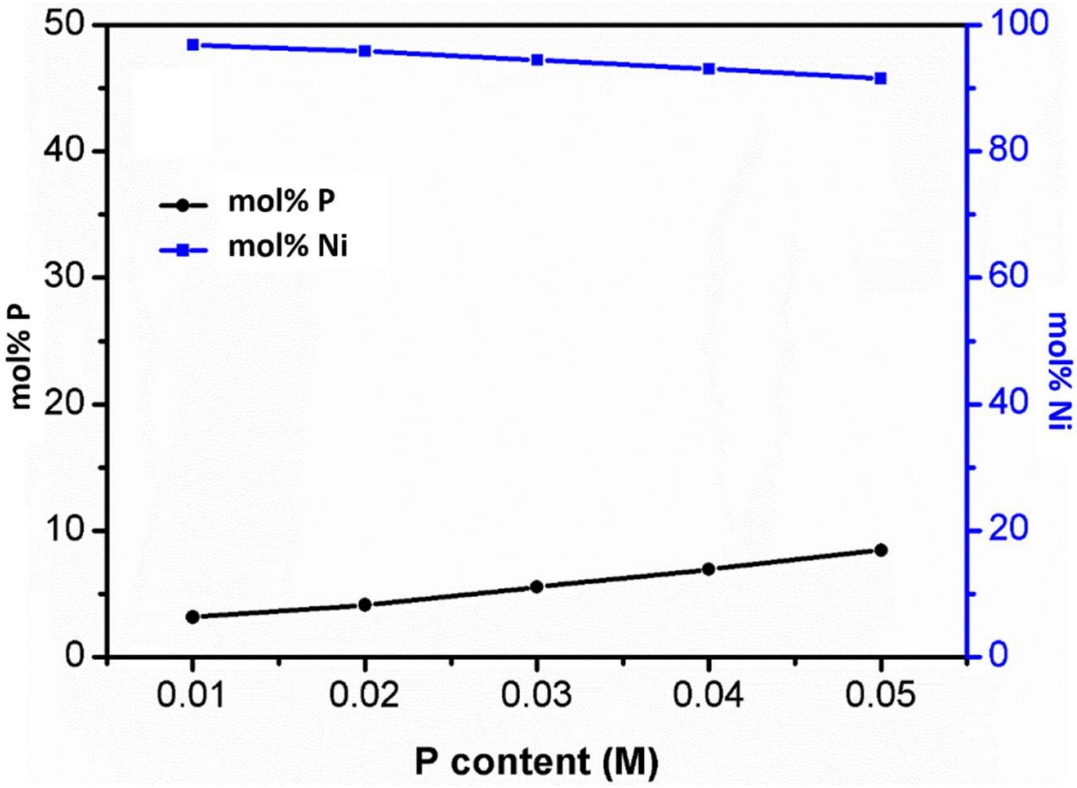
ESI 1 The schematic diagram of the three-electrode electrochemical cell set-up. The low alloy steel working electrode is sealed by the Polytetrafluoroethylene (PTFE) supporter and the area exposed to the solution is $1cm^2$. The saturated Ag/AgCl reference electrode is placed into the luggin capillary filled with saturated KCl solution.

ESI 2 table：Analysis of the current maxima for Ni-P alloy films deposited at different potential

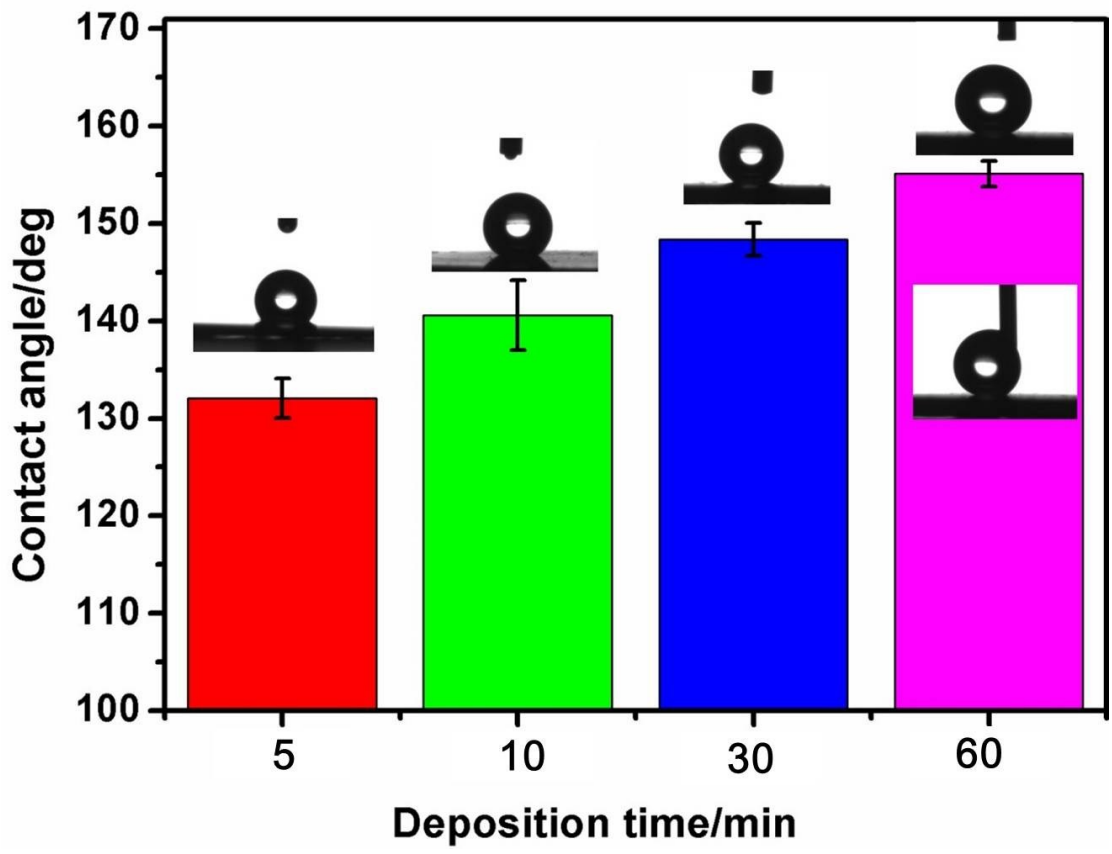
E /V	t_m /s	j_m /mA cm^{-2}	$j_m^2\ t_m$/(mA cm^{-2})^2 s
-0.1	28.7	$4.45*10^{-3}$	$5.68*10^{-4}$
-0.2	1.4	$10.71*10^{-3}$	$1.60*10^{-4}$
-0.3	0.4	$31.58*10^{-3}$	$3.98*10^{-4}$
-0.5	0.1	$41.39*10^{-3}$	$1.71*10^{-4}$



ESI 3 j-t curves of Ni-P deposition with 0.05M reducing agent in the solution and Na_2SO_4 added into the same solution was used as comparison.



ESI 4 Film composition of Ni-P deposit with different reducing agent in the solution.



ESI 5 Contact angle of Ni-P alloy films with patterned morphology for different deposition time: a) 5min; b) 10min; c) 30min; d) 60min. Inserts showed the optical graphs of water droplet on the Ni-P alloys films with patterned morphologies.