

## Electronic Supporting Information

for

A dark field light scattering platform for real-time monitoring  
the erosion of microparticles  $\text{Co}^{2+}$

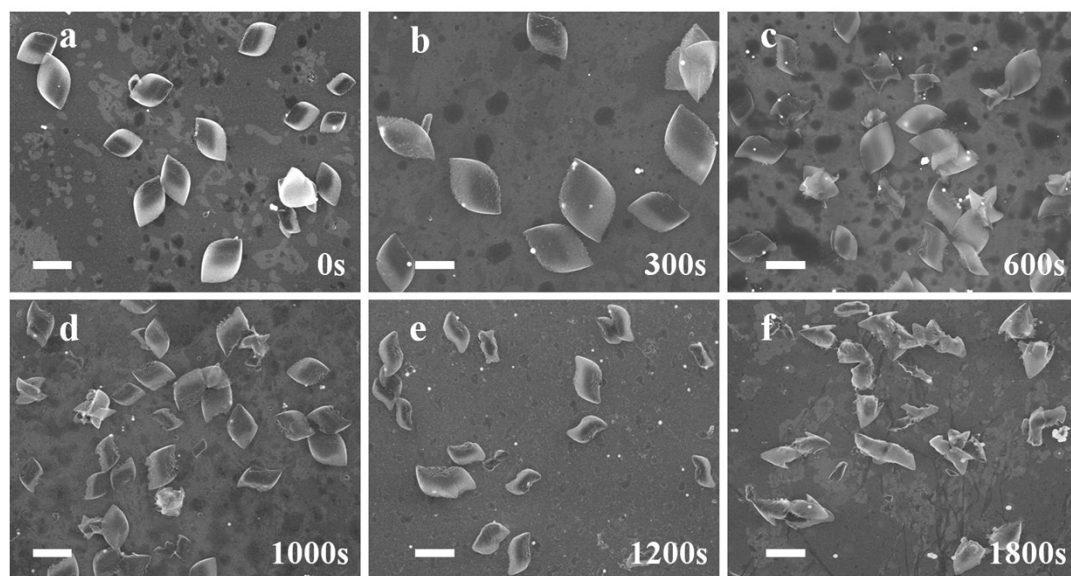
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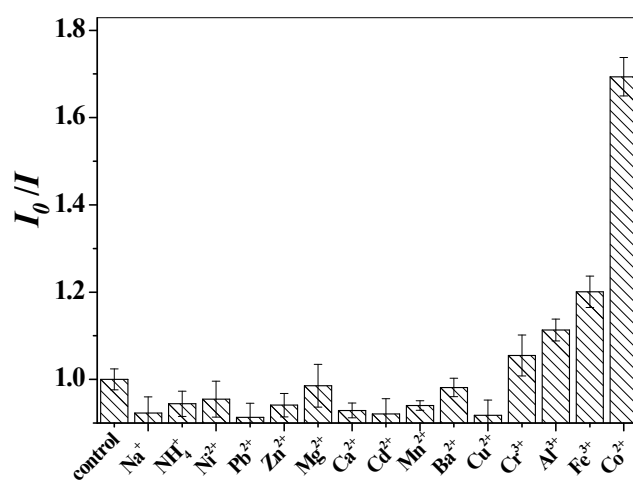
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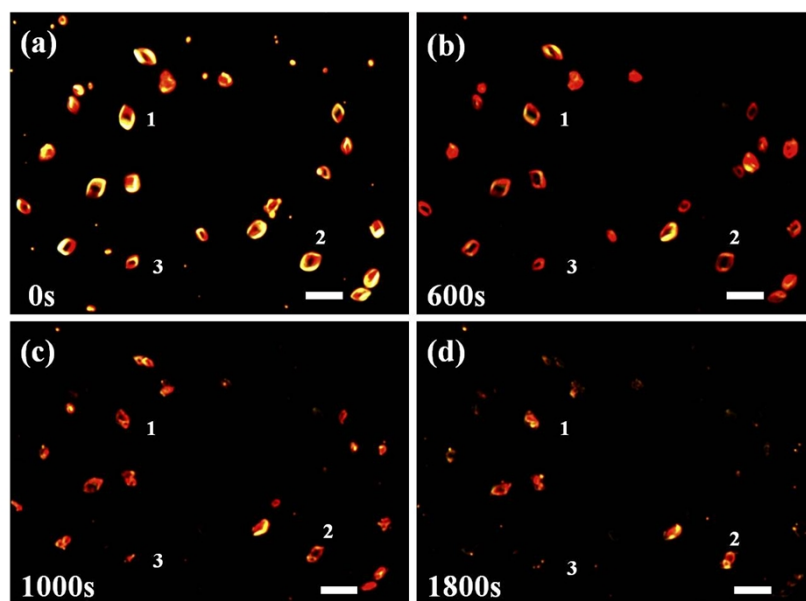
*E-mail: chengzhi@swu.edu.cn*



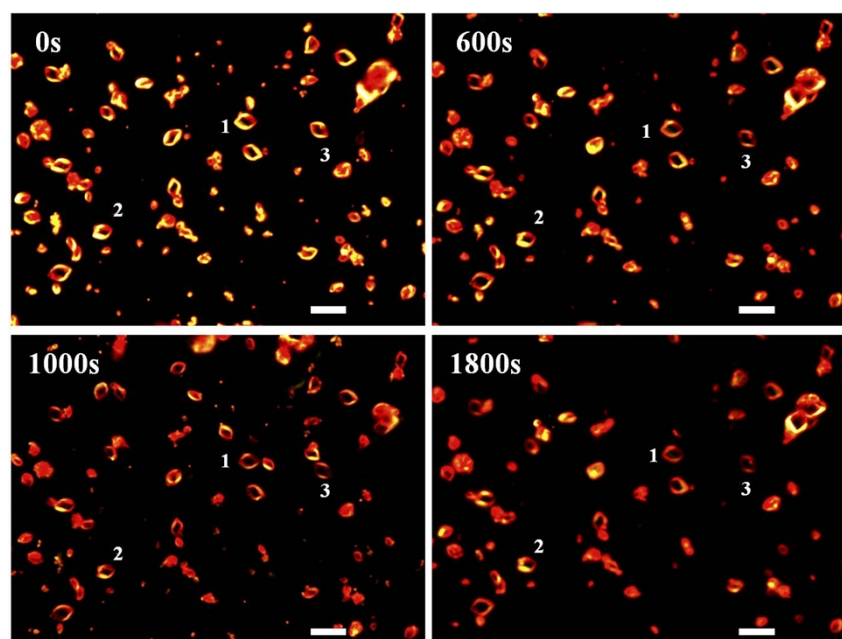
**Fig. S1.** SEM images of PpPD microparticles erode by  $\text{Co}^{2+}$  at different studied time points.  $c_{\text{Co}^{2+}} = 1 \times 10^{-4}$  mol/L. The image scale bar corresponds to 1  $\mu\text{m}$ .



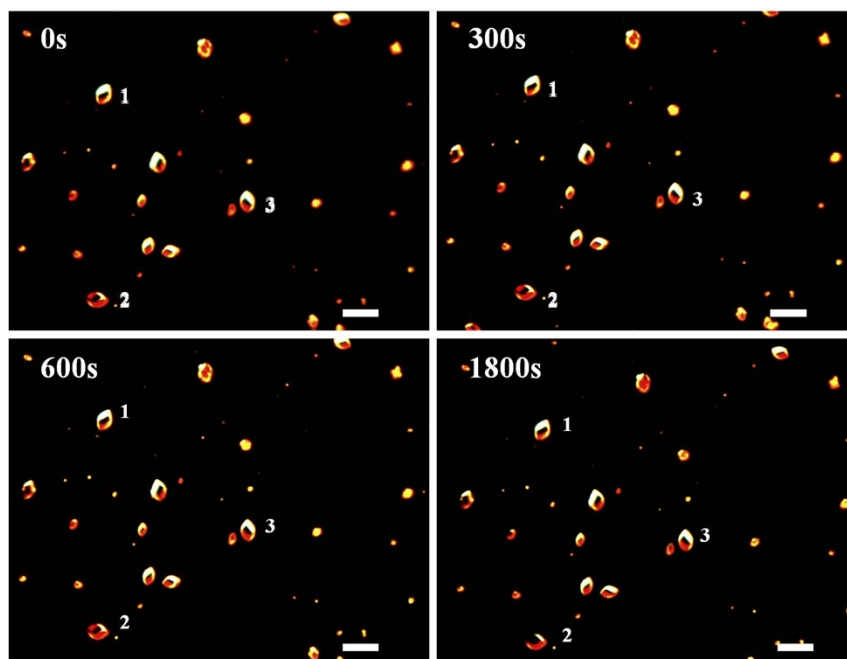
**Fig. S2.** Study of the selectivity of  $\text{Co}^{2+}$  in the erosion of PpPD microparticles. Where  $I_0$  and  $I$  were the dark field scattering intensity of PpPD before and after the reaction with the tested cation solution for 30 min.



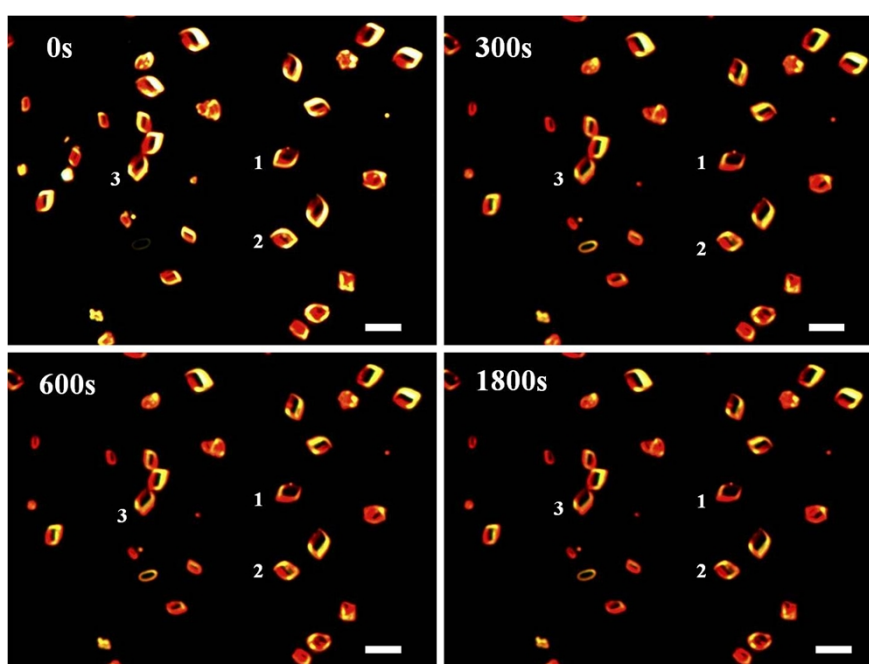
**Fig. S3** Dark-field image of PpPD undergoing erosion by  $\text{Co}^{2+}$ . The times at which the different images were captured are shown with latency time of 400/800 s.  $c_{\text{Co}^{2+}} = 1 \times 10^{-4}$  mol/L. The image scale bar corresponds to 1  $\mu\text{m}$ .



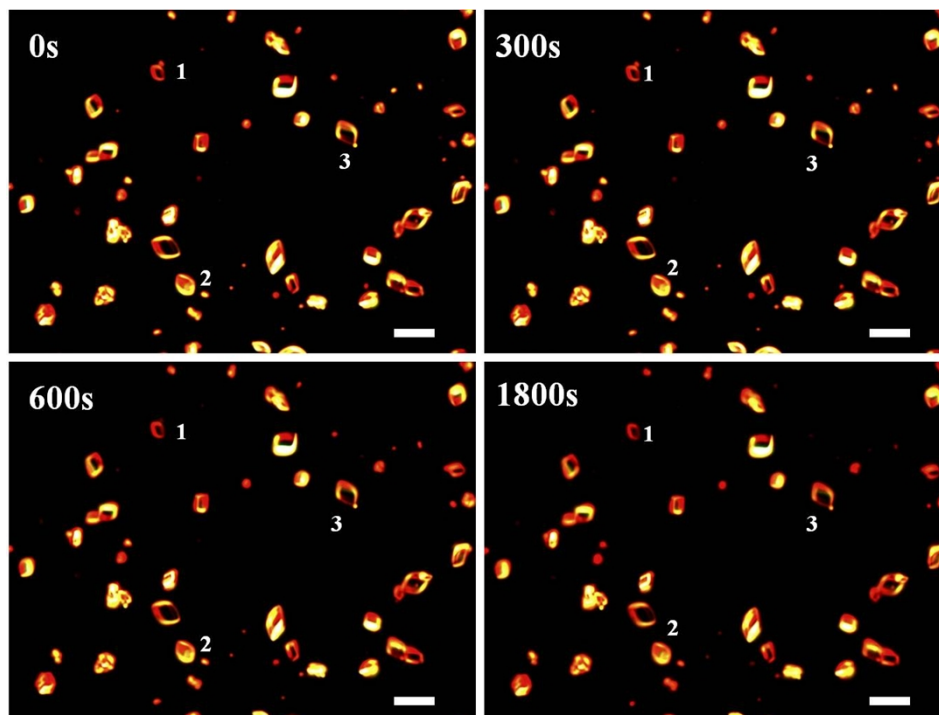
**Fig. S4** Dark-field image of PpPD undergoing erosion by  $\text{Co}^{2+}$ . The times at which the different images were captured are shown with latency time of 400/800 s.  $c_{\text{Co}^{2+}} = 1 \times 10^{-5}$  mol/L. The image scale bar corresponds to 1  $\mu\text{m}$ .



**Fig. S5** Dark-field image of PpPD undergoing erosion by Co<sup>2+</sup>. The times at which the different images were captured are shown with latency time of 400/800 s.  $c_{Co^{2+}} = 1 \times 10^{-6}$  mol/L. The image scale bar corresponds to 1 μm.



**Fig. S6** Dark-field image of PpPD undergoing erosion by Co<sup>2+</sup>. The times at which the different images were captured are shown with latency time of 400/800 s.  $c_{Co^{2+}} = 1 \times 10^{-7}$  mol/L. The image scale bar corresponds to 1 μm.



**Fig. S7** Dark-field image of PpPD undergoing erosion by  $\text{Co}^{2+}$ . The times at which the different images were captured are shown with latency time of 400/800 s.  $c_{\text{Co}^{2+}} = 1 \times 10^{-8}$  mol/L. The image scale bar corresponds to 1  $\mu\text{m}$ .

**Table S1** Correlation coefficients and linear equations of the calibration graphs for  $\text{Co}^{2+}$ .

$\text{Co}^{2+}$ concentration	Linear regression equation/ $\mu\text{M}$	Correlation coefficient $r$
$10^{-3}$ mol/L	$F = 1.01 - 0.0229 c$	0.9984
$10^{-4}$ mol/L	$F = 1.01 - 0.0155 c$	0.9933
$10^{-5}$ mol/L	$F = 1.02 - 0.00861 c$	0.9833
$10^{-6}$ mol/L	$F = 1.01 - 0.00749 c$	0.9809
$10^{-7}$ mol/L	$F = 1.00 - 0.00567 c$	0.9875
$10^{-8}$ mol/L	$F = 0.958 - 0.0239 c$	0.9903