

Convenient and sensitive colorimetric determination of alendronate sodium with Ce^{4+} -triggered oxidation of TMB

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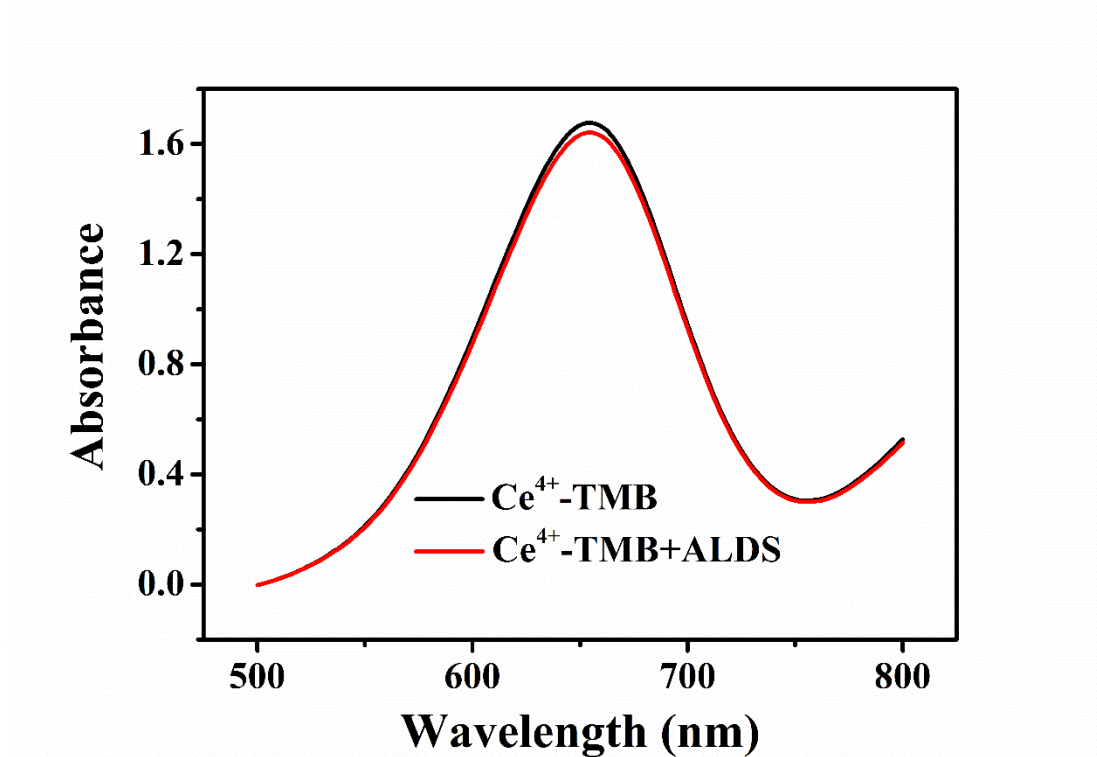


Fig. S1 The absorption spectra of Ce^{4+} -TMB system before and after the addition of ALDS.

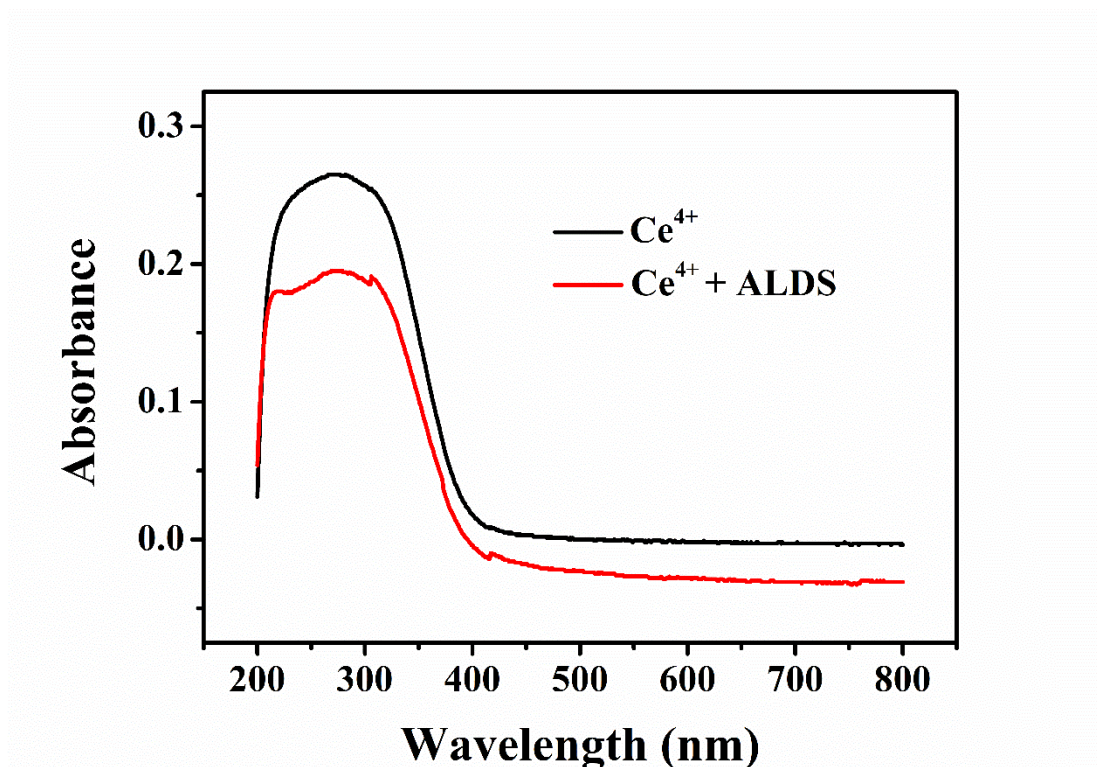


Fig. S2 The absorption spectra of Ce^{4+} in the absence and presence of ALDS.

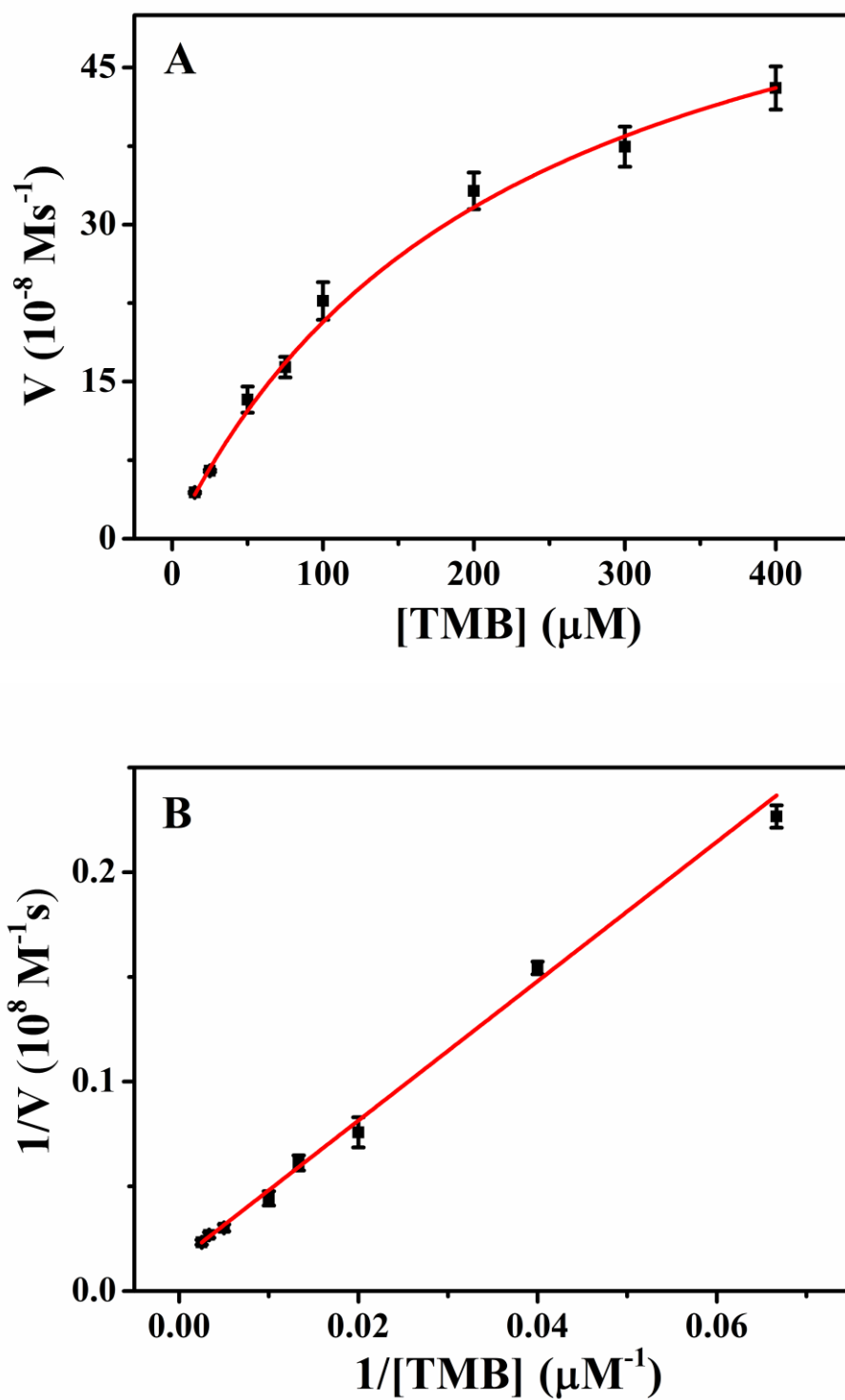


Fig. S3 (A) Steady-state kinetic assay of Ce^{4+} toward TMB and (B) the Lineweaver-Burk plots of the double reciprocal of the Michaelis-Menten equation.

Table S1 Comparison of apparent kinetic parameters of different oxidase mimics toward TMB.

Oxidase mimics	K_m (mM)	V_{max} ($M s^{-1}$)	Refs.
CeO ₂	1.5	6.9	1
CeO ₂ nanocubes	2.01	-	2
dextran-coated nanoceria	3.8	0.7	3
Ce ⁴⁺	0.223	67.2×10^{-8}	This work

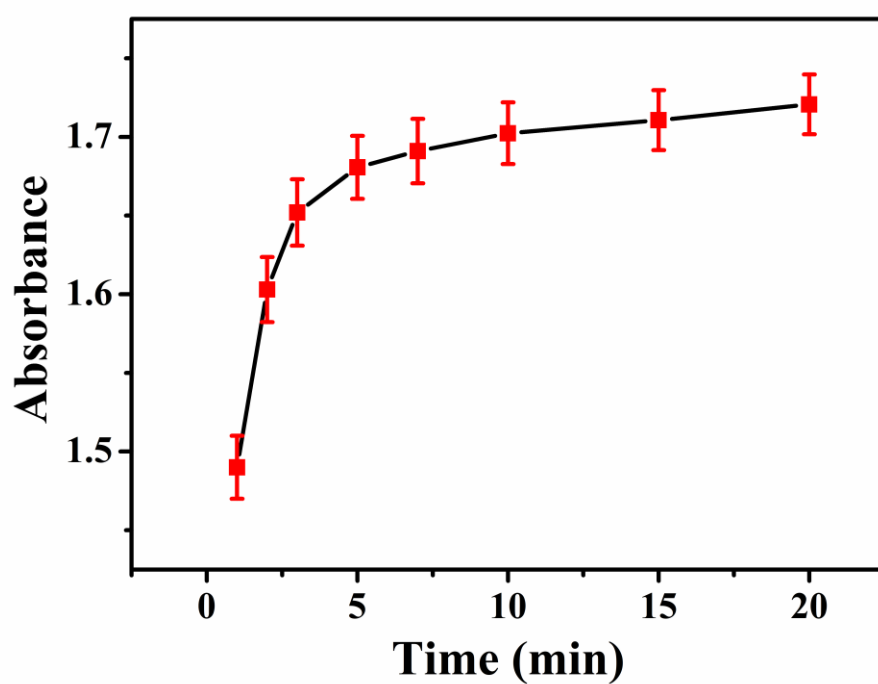


Fig. S4 Effect of reaction time between Ce⁴⁺ and TMB on the absorbance intensity of Ce⁴⁺-TMB system.

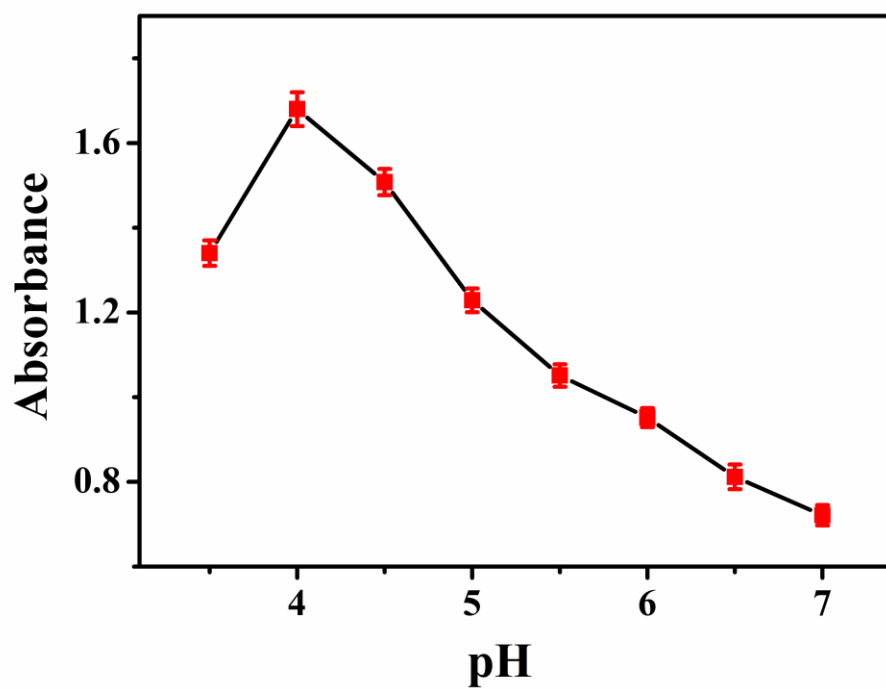


Fig. S5 The effect of pH on the absorbance of Ce⁴⁺-TMB system.

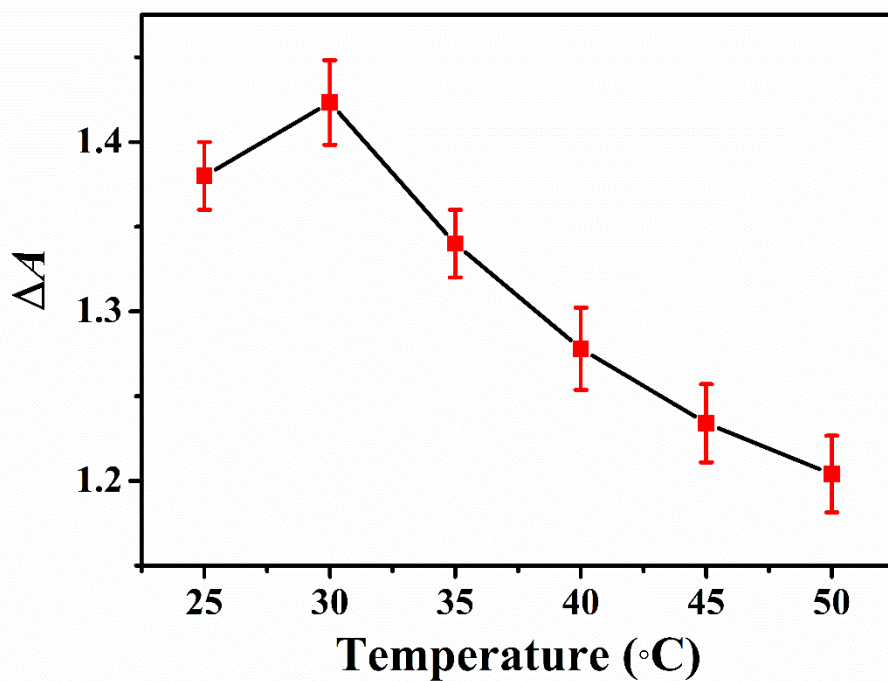


Fig. S6 The effect of temperature on the detection of ALDS.

Table S2 Results for the detection of ALDS in human uric samples.

Uric samples	Added (μM)	Found (μM)	RSD (% , n=3)	Recovery (%)
1	0	ND ^a	-	-
2	2.0	1.83	3.88	91.5
3	5.0	4.59	3.64	91.8
4	25.0	23.95	3.12	95.8

^aND: not detected

Table S3 Results for the detection of ALDS in tablets.

Tablets	Tablet detection results (μM)	Added (μM)	Found (μM)	RSD (% , n=3)	Recovery (%)
1	5.8	2.0	7.92	3.56	106.0
2	5.8	5.0	11.06	3.12	105.2
3	5.8	25.0	30.2	2.15	97.6

References:

- [1] R. Dalapati, B. Sakthivel, M.K. Ghosalya, A. Dhakshinamoorthy and S. Biswas, *Cryst. Eng. Comm.*, 2017, **19**, 5915.
- [2] L. Jiang, S. Fernandez-Garcia, M. Tinoco, Z.X. Yan, Q. Xue, G. Blanco, J.J. Calvino, A.B. Hungria and X.W. Chen, *ACS Appl. Mater. Interfaces*, 2017, **9**, 18595.
- [3] A. Asati, S. Santra, C. Kaittanis, S. Nath and J.M. Perez, *Angew. Chem. Int. Ed.*, 2009, **48**, 2308.