

## CORRECTION

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[View Journal](#) | [View Issue](#)Cite this: *J. Mater. Chem. A*, 2025, 13, 27726**Correction: Hybrid  $d^0$  and  $d^{10}$  electronic configurations promote photocatalytic activity of high-entropy oxides for  $\text{CO}_2$  conversion and water splitting**Jacqueline Hidalgo-Jiménez,<sup>ab</sup> Taner Akbay,<sup>c</sup> Xavier Sauvage,<sup>d</sup> Lambert van Eijck,<sup>e</sup> Motonori Watanabe,<sup>af</sup> Jacques Huot,<sup>g</sup> Tatsumi Ishihara<sup>af</sup> and Kaveh Edalati<sup>\*af</sup>

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[rsc.li/materials-a](https://rsc.li/materials-a)Correction for 'Hybrid  $d^0$  and  $d^{10}$  electronic configurations promote photocatalytic activity of high-entropy oxides for  $\text{CO}_2$  conversion and water splitting' by Jacqueline Hidalgo-Jiménez *et al.*, *J. Mater. Chem. A*, 2024, 12, 31589–31602, <https://doi.org/10.1039/D4TA04689G>.

The authors regret that in the original article, the scale bars in Fig. 4b and 5a were incorrect. The authors also regret errors in the orientation of the atomic planes in Fig. 6e. Additionally, the range of the X-axis in Fig. 9a was twice as large as the correct value, and two numbers in Table 3 were incorrectly shown as 12 and 2.95 instead of the correct values, 0.2 and 6.6. These unintentional errors do not affect any other data or the conclusions of the manuscript. The correct Fig. 4–6, 9 and Table 3 are as shown here.

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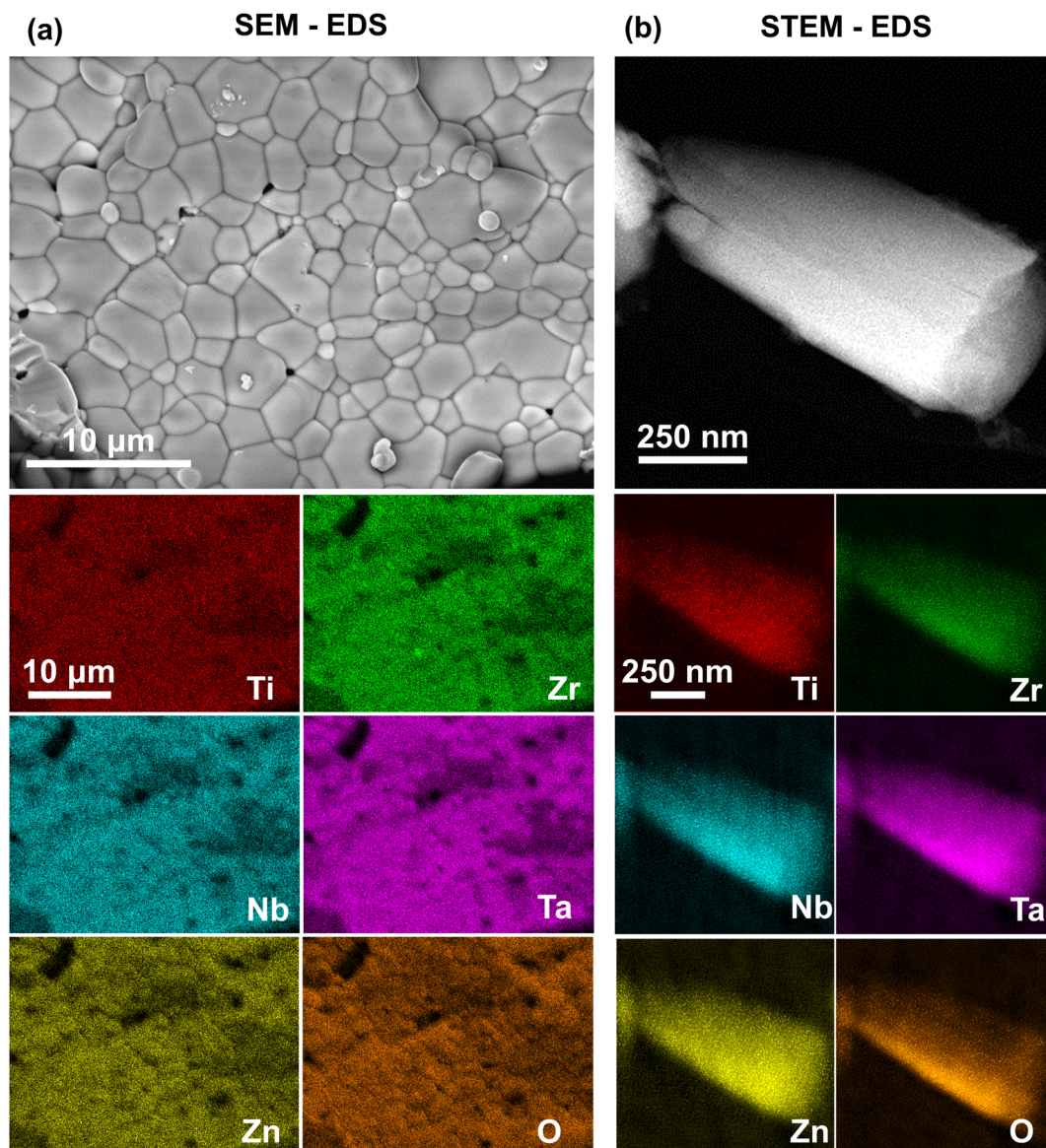


Fig. 4 Homogeneous distribution of elements at the micrometer and nanometer scales in high-entropy oxide  $\text{TiZrNbTaZnO}_{10}$ . (a) SEM-EDS and (b) STEM-EDS mappings.



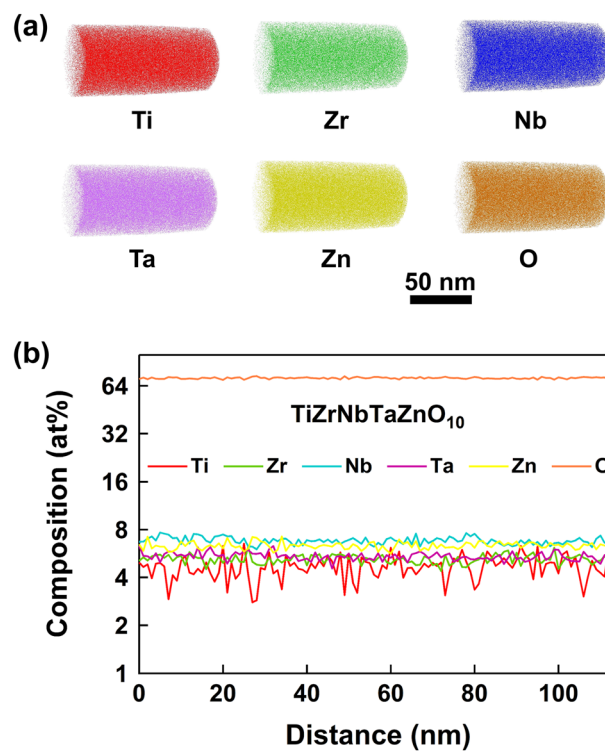


Fig. 5 Homogeneous distribution of elements at the atomic scale in high-entropy oxide  $\text{TiZrNbTaZnO}_{10}$ . (a) Three-dimensional chemical composition distribution and (b) percentage of elements along the sample tip.



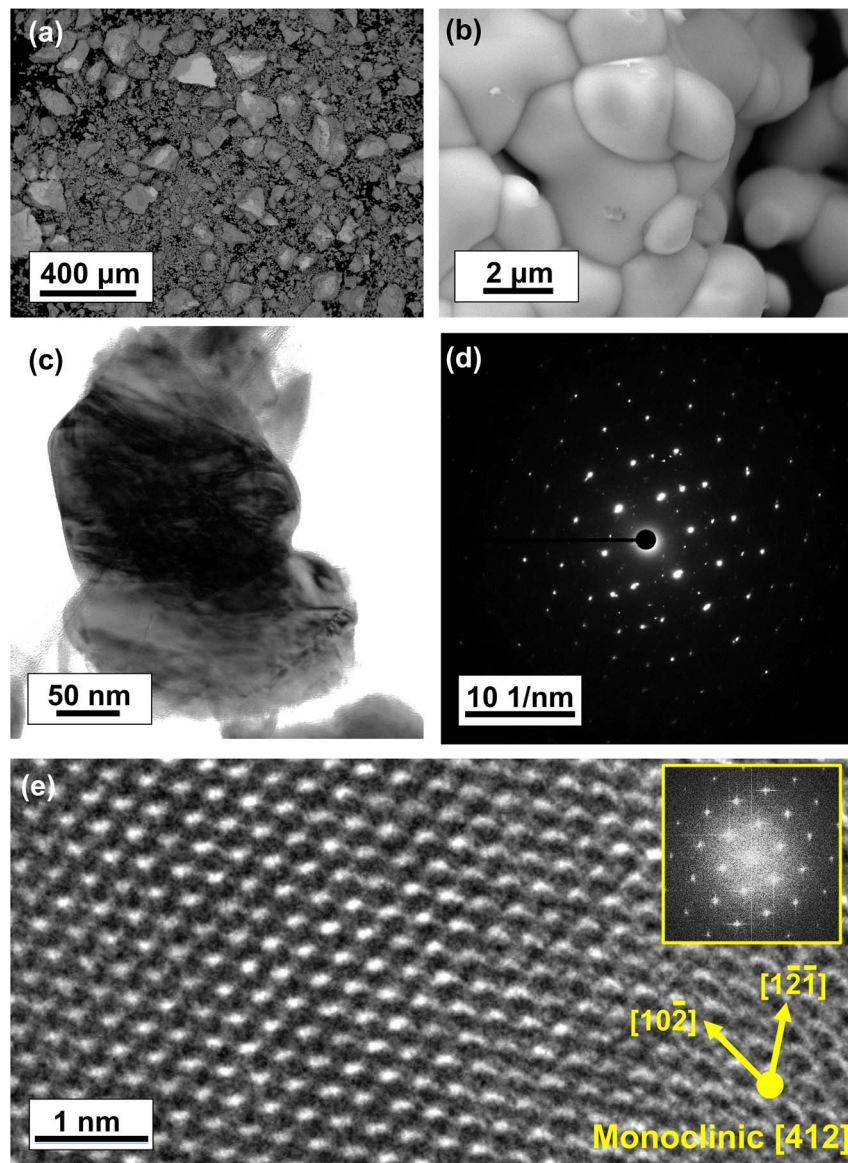


Fig. 6 Formation of micro-sized particles with a monoclinic structure in high-entropy oxide  $\text{TiZrNbTaZnO}_{10}$ . (a and b) SEM micrographs at different magnifications, (c) TEM bright-field micrograph, (d) SAED pattern, and (e) high-resolution image and corresponding fast Fourier transform.





**Table 3** Catalyst mass, catalyst surface area, light source, rate of CO<sub>2</sub> conversion and amount of hydrogen production for several binary oxides, composites and high-entropy photocatalysts compared with TiZrNbTaZnO<sub>10</sub>

Photocatalyst	Mass (mg)	Surface area (m <sup>2</sup> g <sup>-1</sup> )	Light source	CO <sub>2</sub> conversion (μmol hg <sup>-1</sup> )		CO <sub>2</sub> conversion (μmol hm <sup>-2</sup> )		Water splitting (mmol hg <sup>-1</sup> )		Water splitting (mmol hm <sup>-2</sup> )		Ref.
				CO	CH <sub>4</sub>	CO	CH <sub>4</sub>	H <sub>2</sub>	H <sub>2</sub>	H <sub>2</sub>	H <sub>2</sub>	
TiO <sub>2</sub> anatase	50	13.5	300 W Xe					0.3189	0.47			39
TiO <sub>2</sub> (HPT, ~70% columbite)	50	0.1	300 W Xe					0.005	1.08			39
TiO <sub>2</sub> (HPT and anneal)	100 mg	6.8	300 W Hg	1.39		0.15						49
ZnO (HPT)	50							0.585	0.45			48
CeO <sub>2-x</sub>	50	20.5	300 W Xe	1.68		0.081						50
Nb <sub>2</sub> O <sub>5</sub> /TiO <sub>2</sub>	100	57.3	200 W Xe					0.18	10.31			46
S doped Ta <sub>2</sub> O <sub>5</sub> -Cds	5	0.017	300 W Xe					0.2725	16.03			51
MnCo/CN			300 W Xe	47								52
Cd <sub>1-x</sub> Zn <sub>x</sub> S	45	119	100 W LED	2.9	0.22	0.096	0.01					57
TiZrHfNbTaO <sub>11</sub>	100/50	0.089	400 W Hg/300 W Xe	4.6	—	5.16	—	0.0361	0.2			4 and 10
TiZrHfNbTaO <sub>11</sub>	50	3	300 W Xe					0.027	134.76			54
(mechano-thermal synthesis)												
TiZrHfNbTaO <sub>11</sub> (laser crushing)	100	2.69	400 W Hg	50	200	1.66	6.66					24
TiZrHfNbTaO <sub>6</sub> N <sub>3</sub>	100/50	2.3	400 W Hg, 300 W Xe	11.6	—	0.5	—	0.0319	0.006			11 and 17
Ce <sub>0.2</sub> Zr <sub>0.2</sub> La <sub>0.2</sub> Pr <sub>0.2</sub> Y <sub>0.2</sub> O <sub>2</sub>	2	61.4	11 W UV					9.2	0.0002			12
ZrYCeCrO <sub>2</sub> -based + 38 at% Ca		—	150 W Xe					0.415				13
Li(NbVTaCrMoWCo)O <sub>3</sub>	50	11.19	300 W Xe, 420 nm cutoff filter					6.61	0.29			15
(Co, Mn, Ni, Zn)O-metal organic framework	10		300 W Xe					13.24				16
Ce <sub>0.2</sub> Zr <sub>0.2</sub> La <sub>0.2</sub> Pr <sub>0.2</sub> Y <sub>0.2</sub> O <sub>2</sub>	2	61.4	11 W UV					9.2	0.0002			12
(Ca <sub>0.2</sub> Cr <sub>0.2</sub> Mn <sub>0.2</sub> Ni <sub>0.2</sub> Zn <sub>0.2</sub> ) <sub>3</sub> O <sub>4</sub>	20	16.71	300 W Xe	23.01	2.89	0.03	0.65					8
Cu-(Ca <sub>0.2</sub> Cr <sub>0.2</sub> Mn <sub>0.2</sub> Ni <sub>0.2</sub> Zn <sub>0.2</sub> ) <sub>3</sub> O <sub>4</sub>	20	42.08	300 W Xe	5.66	33.84	0.002	0.02					19
(NiCuMnCoZnFe) <sub>3</sub> O <sub>4</sub>	30	66.48	—	15.89	8.03	0.007	0					20
TiZrNbTaZnO <sub>10</sub>	100/50	0.03	400 W Hg/300 W Xe	25.2	9.9	761.3	301	0.2	6.6			This study

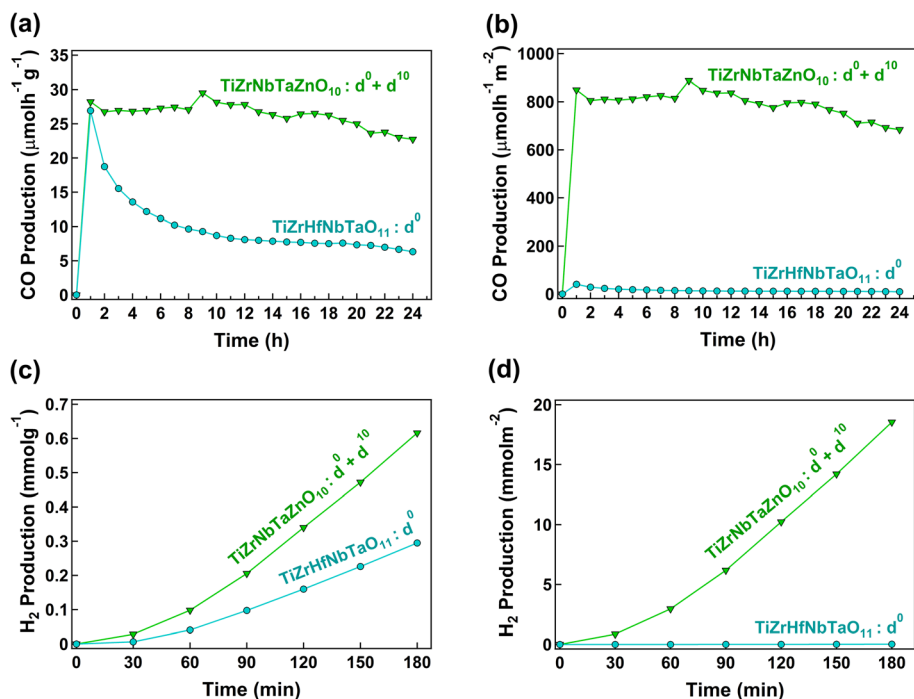


Fig. 9 Enhancement of the photocatalytic activity of high-entropy oxide TiZrNbTaZnO<sub>10</sub> compared to TiZrHfNbTaO<sub>11</sub> due to the mixed d<sup>0</sup> and d<sup>10</sup> electronic configuration. CO<sub>2</sub> to CO conversion rate per (a) unit mass and (b) surface area of the two catalysts. H<sub>2</sub> production from water splitting per (c) unit mass and (d) surface area of the two catalysts.

The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers.

