

Supporting Information

Hydrothermal synthesis of (001) facet highly exposed ZnO plates: A new insight into the effect of citrate

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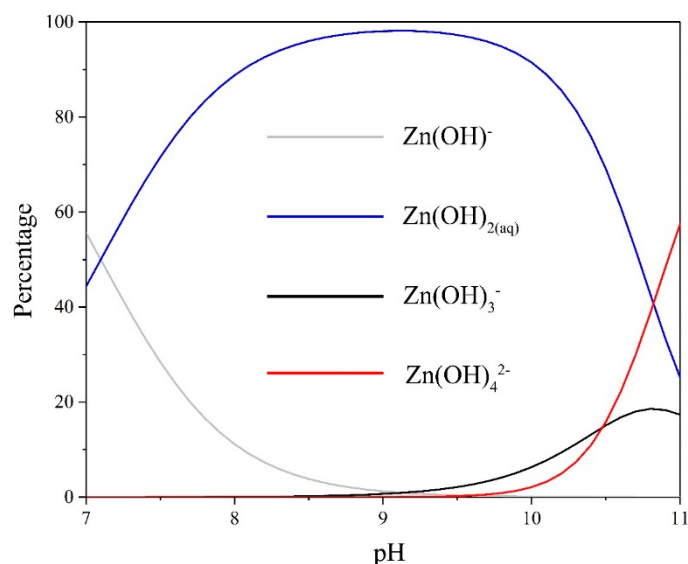


Figure 1. Distribution of Zn²⁺-OH-H₂O system.

The distribution of Zn²⁺-OH-H₂O system was calculated according to the equation (4), (10)-(13) and the corresponding complex constant. The distribution can be calculated according to the equation:

$$[\text{Zn}(\text{OH})_x^{2-x}] = K_{\text{Zn}(\text{OH})_x^{2-x}} \cdot [\text{Zn}^{2+}][\text{OH}^-]^x$$

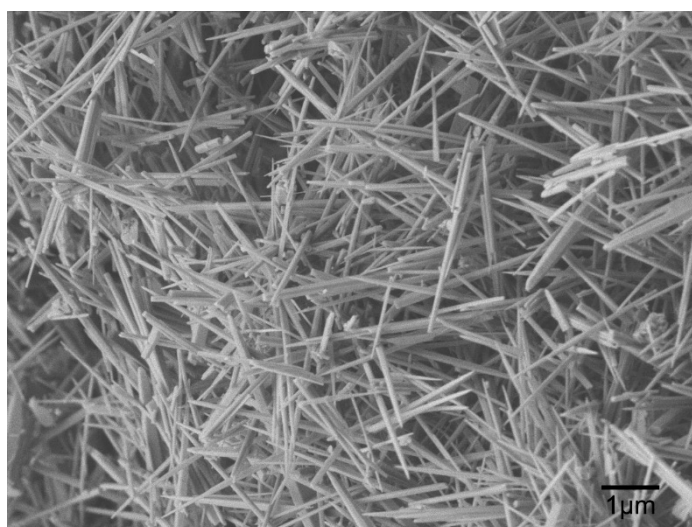


Figure 2. SEM image of ZnO nanorods.

Table 1. Equilibrium equation and complex constant for Zn²⁺-C₆H₅O₇³⁻-H₂O system(25°C).

	Equilibrium Equation	Complex Constant
1	$\text{ZnSO}_{4(\text{aq})} = \text{SO}_4^{2-} + \text{Zn}^{2+}$	1.08×10^0
2	$\text{H}_2\text{SO}_4 = \text{H}^+ + \text{HSO}_4^-$	7.76×10^1
3	$\text{HSO}_4^- = \text{H}^+ + \text{SO}_4^{2-}$	1.21×10^{-2}
4	$\text{H}_2\text{O} = \text{H}^+ + \text{OH}^-$	1.02×10^{-14}
5	$\text{C}_6\text{H}_8\text{O}_7 = \text{C}_6\text{H}_7\text{O}_7^- + \text{H}^+$	7.45×10^{-4}
6	$\text{C}_6\text{H}_7\text{O}_7^- = \text{C}_6\text{H}_6\text{O}_7^{2-} + \text{H}^+$	1.73×10^{-5}
7	$\text{C}_6\text{H}_6\text{O}_7^{2-} = \text{C}_6\text{H}_5\text{O}_7^{3-} + \text{H}^+$	4.02×10^{-7}
8	$\text{Zn}^{2+} + \text{C}_6\text{H}_6\text{O}_7^{2-} = \text{Zn}^{2+}\text{-C}_6\text{H}_6\text{O}_7^{2-}$	5.13×10^4
9	$\text{Zn}^{2+} + \text{C}_6\text{H}_5\text{O}_7^{3-} = \text{Zn}^{2+}\text{-C}_6\text{H}_5\text{O}_7^{3-}$	2.51×10^{11}
10	$\text{Zn}^{2+} + \text{OH}^- = \text{Zn}(\text{OH})^+$	2.51×10^4
11	$\text{Zn}^{2+} + 2\text{OH}^- = \text{Zn}(\text{OH})_{2(\text{aq})}$	2.00×10^{11}
12	$\text{Zn}^{2+} + 3\text{OH}^- = \text{Zn}(\text{OH})_3^-$	1.38×10^{14}
13	$\text{Zn}^{2+} + 4\text{OH}^- = \text{Zn}(\text{OH})_4^{2-}$	4.57×10^{17}



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