

Dear Reviewer,

Thank you for the comments on our manuscript entitled “Preparation and characterisation of polyurethane acrylate-based titanium dioxide pigment for blue light-curable ink”

According to the comments, all the changes and the additional descriptions in the revised manuscript are highlighted in yellow color. And the specific point-by-point responses have been appended below. The spelling, grammar, word use, and punctuation throughout the manuscript has been revised by professional language editing service.

We appreciate you again for your kind support and helpful comments on this article.

Yours sincerely,

Reviewer 1

1. The purity of the used chemical should be given in the Section 2.1.

Response: Thanks for pointing out it. The purity of the used chemical had already been given in Section 2.1, such as “Except BGC, all chemical reagents were of analytical grade, which is of indicator grade, and were used without additional purification.” in line 82.

2. TiO₂ should be characterized by size distribution as well as by X-ray diffraction to show the purity of the sample.

Response: Thanks for pointing out it. The size distribution and X-ray diffraction of TiO₂ were shown as follow, and it showed that the TiO₂ was pure.

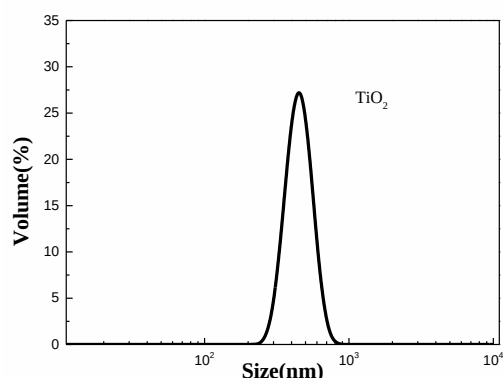


Fig.1 Particle size of TiO₂

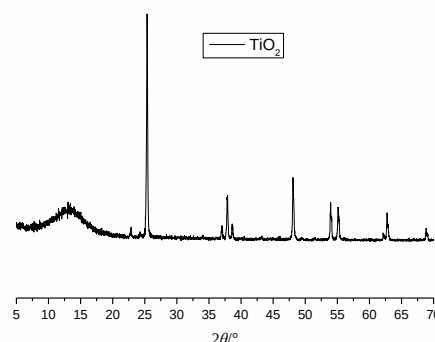


Fig.2 X-ray diffraction curves of TiO₂

3. Could you give the value of a specific temperature?

Response: Thanks for your reminding. The specific temperature was discussed in Section 3.1, the temperature range was 60-90°C.

4. How was the dispersion stability monitored? By turbidity measurements?

Response: Thanks for pointing out it. The dispersion stability was tested by sedimentation method. The unmodified and modified TiO₂ ink materials were diluted

in HEA monomer (PU-TiO₂: HEA = 2:8), and placed for three weeks to observe the dispersion stability of the ink.

5. Line 178. Please remove “Figure 3 shows the reaction temperature effect on the -NCO ”. In my opinion, this is a repetition.

Response: Thanks for pointing out it. The sentence was removed.

6. Line 182-183. “(...) resulting in the system’s viscosity sharply increasing.” Is it your observation? There is no data available as a proof. Please add some values or references.

Response: Thanks for your pertinent advice. A reference was added in manuscript. The reference as followed: Cao, B.; Huang, Y.; Zhang, H.; Shao, J. Synthesis and Properties of Low-Viscosity Blue-Light Cured Urethane Acrylate Oligomer[J]. Journal of Zhejiang Sci-Tech University, 2015, 33(09): 629-634+674.

7. Line 192-194. Please remove the text.

Response: Thanks for pointing out it. The text was removed.

8. Figure 3 and Table 1. Standard deviation should be given. Were the experiments repeated or done only once?

Response: Thanks for your pertinent advice. In figure 3 and Table 1, three times for each sample was measured, and the -NCO conversion and viscosity was the average.

9. Please standardize the format of the headers under the figures.

Response: Thanks for pointing out it. The format of the headers under the figures was modified according to the “Microsoft Word template”.

10. Why didn't the authors perform a simple spectrophotometer test to show the dispersion stability? That would be a more accurate result.

Response: Thanks for pointing out it. In order to visually observe the dispersion stability of Polyurethane acrylate-based TiO_2 , sedimentation method was selected in this paper. In general, according to the result the Polyurethane acrylate-based TiO_2 inks have good dispersion stability after modified. At the same time, in our preliminary testing process, we found that a simple spectrophotometer test is not suitable for testing the dispersion stability of Polyurethane acrylate-based TiO_2 . Thus, we chose the sedimentation method to analysis the dispersion stability of Polyurethane acrylate-based TiO_2 .