Response to Reviewer 2 Comments

Point 1: The work does not have novelty. The group used ready filaments even without modifying PEEK. In addition, the authors only used the polymer without using any filler to impart antibacterial activity or increasing the mechanical stability. at least a filler for increasing the mechanical properties should be added. Only surface finishing (surface treatment) is not enough.

Response 1: We think there is some novelty of our paper (yellow parts in the Introduction and Discussion sections). There are some previous studies about PEEK and its composite, but most of them using traditional manufacturing methods, e.g., injection molding. Due to the semicrystalline structure and high melting temperature of PEEK (compared with other FFF filament materials like polylactic acid (PLA) and acrylonitrile butadiene styrene (ABS)), it is difficult to produce PEEK objects by FFF technology, and the process is liable to cause excessive thermal stress and thermal cracks. Nowadays, it is possible to print pure PEEK, but for PEEK composite, there are still some difficulties in techniques and materials. Until now, the studies about the bioactivities (e.g., cell adhesion, metabolic activity, and proliferation) of FFF 3D-printed PEEK and its composite, to the best of our knowledge, are still lacking. Therefore, the novelty of this study is not for PEEK material, but for the analysis of FFF 3D printed PEEK surfaces.
Besides, in our study, the major clinical application of FFF 3D-printed PEEK is bone replacement material, for cranio-maxillofacial defects, e.g., skull, maxilla, mandible and nasal bone. So our study is focused on the osteoblastic response, not on the antibacterial activity. Antibacterial property is indeed important and needs to be assessed in future experiments.
For the mechanical properties, we explained in the following parts (Response 3).

Point 2: Table 1 must be removed as it is not necessary (similar to advertisement).

Response 2: Thank you for your suggestion. We deleted the technical properties of the printer in Table 1, only left the printing parameters because the printing parameters might influence the sample surfaces and properties, like layer thickness and printing temperature, which should be declared in the Methods part.

Point 3: The number of analysis is not bad. but it need mechanical tests. They suggested to use instead of Titanium but no mechanical test was shown.

Response 3: Thank you for your suggestion. The reason why we did not show the mechanical properties result is due to the design of our study. In one of our previous paper (doi.org/10.3390/jcm8020240), we evaluated the mechanical strength and cytotoxicity of the FFF 3D-printed PEEK. The result is shown below. Therefore, in this paper, in order to emphasize the biological tests (e.g., cell adhesion, metabolic activity, and proliferation), and highlight the focus of this research, we did not mention the mechanical properties test. But we cited this publication in the introduction part in the original version to explain the advantages of PEEK in elastic modulus (green colour).

Mechanical properties of FFF- 3D printed PEEK.

Groups	Tensile strength (MPa)	Tensile modulus (GPa)	Bending strength (MPa)	Bending modulus (GPa)	Compressive strength (MPa)	Compressive modulus (GPa)
PEEK	95.21 ± 1.86	3.79 ± 0.27	140.83 ± 1.97	3.56 ± 0.13	138.63 ± 2.69	2.79 ± 0.11

Point 4: The figures are good.

Response 4: Thank you for this comment.

Point 5: This ref could be cited in the introduction. Antimicrobial modified hydroxyapatite composite dental bite by stereolithography. Polymers for Advanced Technologies 2017.

Response 5: Thank you for your suggestion. After carefully checking this publication, we could decide to include this reference in our paper (Ref. 5).

Point 6: The number of references is high. around 40 would be enough.

Response 6: Thank you for your suggestion. We have chosen now the most relevant publications and thus deleted some references.