*dear Editor/Dear reviewers,*

*First of all, the authors would like to thank the reviewers for comments and suggestions. All the questions made us revising the paper and obtaining a more complete form of our work, and we are very grateful for your suggestions. In this document the answers follow your remarks and appropriate changes were made in the manuscript and are now in another color to be easier to find.*

The reviewer comments on the manuscript:

**Review 1**

ADDITIONAL COMMENTS

Please, be as specific as possible if major correction by the author(s) isrecommended!:

I think that the paper meets the criteria to be published after minorrevision without additional review, since the corrections that should bemade are not of the essential importance for the quality of the presentedresults. Some parts of the Introduction should be rewritten or edited inorder to obtain text that is better understandable. Also English spell checkshould be done throughout the paper since there are typing mistakes in thetext. In the Experimental part is omitted the description of the cavitationmethod that was used. It should be added, or be referred to the appropriatereference where it is described. The discussion of the obtained resultsshould also be provided in the manner of explanation of the reasons (orpossible reasons) for that behavior. At the end some references are not inaccordance with the Author Guidelines of the journal.

In my opinion, this manuscript should: be published after minor revision without additional review

**Review 2**

ADDITIONAL COMMENTS

Please, be as specific as possible if major correction by the author(s) is  
recommended!

 Introduction

1. Please justify the idea of testing dental composites against cavitation  
   erosion.Page 2, line 7: Please sort the references in the right order.

The method for adhesion testing should give information about quality of the bond established between the film and the substrate. There is a number of methods to directly test the adhesion using some standard methods where the adhesive is subjected to the pulling test. In this special case the adhesive is added to the substrate of interest and on the other side it is glued to the machine. We were not able to glue the film to the machine as the polymer was soluble in the usually used adhesives. So we started the search for alternative method and the method of indirect testing appeared as a logical solution. It is possible to assess the adhesion by using the microhardness measurements using different loads and by incorporating the data in the adequate mathematical model it is possible to evaluate adhesion of the film to the substrate. We did this research and the results were published in our previous work referenced in the paper. We felt that other methods could be used in order to evaluate results and the method of contact angle measurement and cavitation appeared to be logical choice. Therefore we wanted to compare the cavitation resistance of films produced in this research. Indirectly it gives information about the adhesion quality. Also the cavitation resistance gives the resistance of the film to extreme exploitation conditions and this could extrapolate the long lasting use of the adhesive and to enable to test it a short time.

Experimental:2.1 Materials:

1. Please add chemical formulas of all used compounds, not only the name

The chemical formulas of all used compounds are added.

BisGMA (Bisphenol A glycidylmethacrylatе, C29H36O8), TEGDMA (triethylene glycol dimethacrylate, C12H18O6), CQ (Camphorquinone, C10H14O2), and 4EDMAB (ethyl-4-dimethylamino benzoate, C₁₁H₁₅NO₂) were all supplied by Sigma - Aldrich. 3-aminopropyl)tri-methoxysilane (APTMS, C9H23NO3Si), potassium hydroxide (KOH), tetrahydrofuran (THF, C4H8O), and methanol (CH3OH) was purchased from Fluka (Sigma-Aldrich, Darmstadt, Germany).The tris(2-methoxyethoxy)(vinyl)silane(VTMOEO, C11H24O6Si); (3-methacryloxy propyl trimethoxysilane) (MEMO, C10H20O5Si). Aluminum chlorohydrate Al2Cl(OH)5 • 2.5 H2O was supplied from Clariant company under the brand name Locron L.

3. 2.2. Ferrous oxide doped alumina particles preparation via sol-gel route:  
Please describe in detail sol gel technique of obtaining alumina particles.  
I cannot find information about this chemical compound, it is not available  
in Sigma-Aldrich, please write a little more about it - eg its physical  
state. From the chemical formula it appears to be in a solid state. FeCl3·6H2O also has solid state. How two solid substances can form a sol, which is  
liquid.

The text is reformulated.

The alumina particles were synthesized via the sol gel technique: Al2Cl(OH)5 · 2.5 H2O, FeCl3·6H2O and demineralized water as a solvent. Demineralized water and aluminum chlorohydrate were mixed on a magnetic stirrer until complete dissolution and then 1.5 wt. % of FeCl3·6H2Owas added with continued mixing. The mixture solution is poured into a petri dish and allowed to gel. The resulting mixture was ground in avian and the powder was calcined at 900 °C for two hours. The amount of Fe2O3 precursor was adjusted so as to obtain 10 wt. % Fe2O3 in the final composition of particles. The gel was heat-treated at 900 °C in order to obtain the appropriate crystal structure of reinforcement [12].

2.4. Surface modification of alumina based particles

4. Line 19: what was the size of alumina particles?  
Line 20: please add the value of the boiling point of toluene.

The particle size of alumina doped with iron oxide was previously determined by particle size analyzer and the values obtained are: d(0.1) = 0.412 µm, d(0.5) = 0.608 µm,d(0.9) = 1.208 µm [JelenaZec, NatašaTomić, MiloradZrilić, SmiljaMarković, DušicaStojanović and RadmilaJančić-Heinemann, Processing and characterization of UHMWPE composite fibres with alumina particles in poly(ethylene-vinyl acetate) matrix, Journal of Thermoplastic Composite Materials, Vol. 31 (2017) 689–708]. According to the obtained results, calcined Al2O3 Fe was of submicron size.

The boiling point of toluene is (110.6 ºC).

2.6. Composite film preparation

5. How films were deposited on substrate?Please describe in a more detailed  
way the films formation on the substrate.What was film thickness? In the Abstract it is mentioned that brass was used as a substrate. Please  
add in this place more information about the substrate material: what brass  
was used, what properties it has?  
Properties of a substrate material influence adhesion and resistance of film  
to cavitation erosion.

The substrate is brass 260 ½ hard, (ASTM B36 250 μm-thick (ASTM B36, K&S Engineering). The chemical composition of the substrate is copper (68.5-71.5%), zinc (remainder), lead (0.07% max) and iron (0.05% max). Prior to deposition, the brass substrate requires the activation in 20% sulfuric acid solution [Ivana Mladenović, JelenaLamovec, VesnaJović, Bogdan Popović, MilošVorkapić and VesnaRadojević, Proceedings of 4th International Conference on Electrical, Electronics and Computing Engineering, IcETRAN 2017, Kladovo, Serbia, June 05-08, ISBN 978-86-7466-692-0]. After drying the substrate, the film was deposited. The composite matrix was prepared from: Bis - GMA 49.5 %, TEGDMA 49.5 %, CQ 0.2 % and 4EDMAB, 0.8 % and cured under UV light. The composite films were made with 0.5 wt. %, 1.5 wt. % and 3 wt. % content of modified fillers as presented in the previous work [12]. Drop coating method was used in polymer film deposition on the brass substrate. The method considers the application of a thin cover to a brass substrate by depositing a single drop of a monomer solution on its surface. The film was then polymerized under UV light for 3 minutes. The ultimate thickness of the deposit film was controlled by the weight of a glass cover which was placed over the drop, and thus obtained film had thickness value – 70 ± 5 µm.

2.7. Materials characterization methods

6. In this part is mentioned about the mass loss measurements. However, there  
is nothing about the condition of cavitation test. Please add information  
about the test device and the conditions of the test. Please describe the  
reason of so short lasting tests.

Cavitation tests were performed using an ultrasonic vibratory cavitation device in accordance with the ASTM G32-92 Standard (thestationary specimen method).The device consisted of a 360 W high frequency generator, electrostrictive transducer, transformer for mechanical vibrations and water bath containing the testspecimen. Cavitation testing was accomplished using the recommended standard values [16]:

* frequency of vibration: 20 ± 0.5 kHz
* amplitude of vibrations at the top of the transformer: 50 μm
* gap between the test specimen and the transformer: 0.5 mm
* temperature of water in the bath: 25±1 °C
* ordinary water flow: from 5 to 10 ml/s

7. Line 19: what was the reason for adding references to Okada [15] and Knapp  
[16] in the description of the experiment?

Those references were meant to show the conformity of the procedure to this used in literature.

3. Results and discussion

8. 3.1. Microstructure of the particles  
Please discuss the wide range of particle sizes, the standard deviation is  
the same size as the average value.   
I could not find information about thickness of all deposited films.

Analyzing the processed FE-SEM images by Image Pro Plus software, the distribution of Al2O3 Fe particle size showed a submicron range of diameters achieved by the sol-gel technique. The average mean diameter (Dmean) of neat Al2O3 Fe particles was 0.171 µm (Table 1) with standard deviation 0.123 µm. Obtained higher standard deviations indicate narrow distribution of particle size in a wider diameter range. Obtained range from image analysis for neat Al2O3 Fe particles was 0.007 – 2.119 µm; for Al2O3 Fe – VT was 0.008 – 2.623 µm; for Al2O3 Fe – ME was 0.010 – 3.355 µm; for Al2O3 Fe – AM was 0.009 – 3.255 µm; and for Al2O3 Fe – BD was 0.013 – 4.351 µm. The predominance of a great number of particles with low diameters led to small mean diameter of particles [13].

The information about the thickness of all deposited films was added in section 2.6. Composite film preparation.

9. 3.3. Testing of cavitation erosion  
I do not understand the idea of so many references that are related to the  
drying temperature. Considering that 4 references from eight quoted items  
are publications of the authors of this manuscript, only one reason comes up  
- an increase in the quotations of the author and an increase in their Hirsz  
index. Such proceedings are considered unethical.

The different references are related to different materials tested by the same method. Considering your suggestion the references were removed.

10. The samples must be cooled to room temperature to be accurately weighed.  
Please add images of surface damage and cross-sections of tested films after  
cavitation test.

The films are transparent so in order to visualize the changes they have to be colored and photographed. The differences in the texture of the films are hardly visible in normal imaging tools, but the high resolution scans enable the observation of slight differences and the visualization of those using image analysis techniques to enhance the contrast that results from the exposure to cavitation. The processed images are presented in the paper as original images would have little interest for the reader.

Cross-sections of tested films after cavitation test were presented and discussed in the paper as follows:

Figure 8.tif

From the Figure 8, it can be seen that the composite film with weak adhesion have mostly complete debonding from the substrate. The composite film reinforced with Al2O3 Fe – VT particles resisted to the cavitation erosion by stronger adhesion which is seen by remainding multipoint connection to the substrate and the lowest share of damage (Figure 7).

11. Please describe what you mean in the term “Share of observed damage”.  
This term, as well as Figs. 6 and 7, confirm the need for microscopic images  
of the surface of the studied films.

Imaging technique required to observe the destruction of the film was high resolution imaging in the form of high resolution scanning. Those images give the resolution of 600 dpi which enables the visualization of the 2,54cm/600 size defects which were considered to be enough for the study. The difficulties that the authors had in extraction of those data were described in previous answer.

12. What do you mean in the terms “surface degradation level” and “surface  
damage ratio”?

“Surface degradation level” and “surface  
damage ratio” refer to the surface of the film after exposure to cavitation relative to the initial surface of the film.

13. Authors have written” These findings could be related to the size of the  
defects observed in images of composite films after exposure to  
cavitation.” Please show and describe the defects. There are not images  
presenting the defects in the composite films after exposure to cavitation.

Extracted data are presented as described earlier.

In my opinion, this manuscript should: be published after major revision and additional review.