**ANSWERS TO REVIEWERS** for the manuscript *Accelerated physical and chemical transformations in ceramics processing* by Ernő Kiss and Sanja Panić

**Reviewer A**

Dear Reviewer,

Thank you very much for the comments regarding our paper. We appreciate your opinion and positive attitude towards publishing of our paper in the form as it is originally written.

**Reviewer B**

Dear Reviewer,

We appreciate your valuable comments and find them very useful for increasing the quality of the paper. Your general attitude related to paper rejection may be reconsidered based on the additional changes that we have made. Namely, the definitions of all the accelerating agents have been modified in order to clarify the differences between them in terms of their composition and mechanism of action. Also, new references and some schemes presenting the solid state transformations in ceramics processing in the presence and absence of the catalyst have been added to the paper. The authors of the paper agree that it contains the theoretical explanations and facts, but they are well supported by the experimental examinations making this paper written as a survey. The Journal of the Serbian Chemical Society deals with all fields of chemistry, so the purpose of the theory is to make the paper more understandable for the readers who are not specialists in the field of solid state chemistry. We can agree that this paper is not written as an original scientific work, but its originality can be perceived in terms of delineation of the terms flux agent, mineralizer and catalyst, very often covered by the general name additive. Therefore, resolving the differences in terminology supported by the survey of experimental results from various authors was the main task of this paper.

**Reviewer C**

Dear Reviewer,

We appreciate your valuable comments and find them very useful for increasing the quality of the paper. Following are answers to the given objections/questions, as well as the changes in the revised text according to your suggestions:

Your comment:

After reading the manuscript it quite difficult to understand what the difference between flux agents, mineralizers and catalysts is. Fluxing agents are defined as compounds that change the temperature of the liquid phase appearance. However, there is no example which clearly explains the role of flux agent in appearing of liquid phase. For somebody who is not specialist in cement clinkers is difficult to understand the process of liquid formation. Although everything is about formation of liquid, there is no phase diagram showing phase composition. How much liquid phase?

It is similar with mineralizers. They “enable the formation of higher amounts of cement clinker in the liquid phase “. There is no clear differentiation between flux agents and mineralizers.

The manuscript is missing figures which can clearly point out the difference between flux agents and mineralizers. It is quite surprising that there is only one figure (scheme). That is Fig. 1 which, in my opinion, shows grains in sintered material rather than reaction between solid particles as the authors claim.

Answer:

The definitions of all the accelerating agents, specially flux agents and mineralizers, have been modified in order to clarify the differences between them in terms of their composition and mechanism of action (lines: 120-129, 185-188, 203-205, 210-214). Since mineralizers and flux agents described in this survey mostly refer to those that occur in cement clinker, the part of the paper describing the basic chemical composition of the cement clinker has been moved to the chapter 2.1. Additional reason for this is the connection between flux agents and mineralizers in terms that many substances act as flux agents and mineralizers at the same time. Thus, more attention has been given to those substances compared to the ones acting as flux agents only. This is discussed in more detail in the chapter of mineralizers giving concrete examples of those substances (e.g. transition metal oxides) and their mechanism of action, all supported by the Figure 4.

Since the Journal of the Serbian Chemical Society deals with all fields of chemistry, the purpose of the theory given in the introduction is to make the paper more understandable for the readers who are not specialists in the field of solid state chemistry. Figure 1 represents the general scheme of the diffusion processes that occur on/in the solid grain, not the reaction between the solid particles. In order to clarify this, additional sentence has been inserted (lines: 56-57).

Your comment:

The chapter describing Catalysts is missing schemes of mechanisms as well.

Authors: „Catalyst does not change permanently during the reaction, because the created intermediates are decomposed into the final product, and the catalyst is released to repeat a new catalytic cycle. “

It would be nice to have figure showing an example of mechanism which explains the role of catalyst. For example; How is it possible to use CuO catalyst several times in mullite production?

In the reference list, there are only few papers recently published. For example, there are only 5 references published in the last 6 years.

Answer:

According to your suggestions, the chapter 2.4.2. has been corrected and new figures (Figure 5 and Figure 6), together with the new references (48 and 49), have been inserted (lines: 399-430).

The authors hope that the paper in the present form will satisfy your quality demands regarding the delineation of some terms in the field of solid state chemistry (flux agent, mineralizer and catalyst). Even today practitioners very often use the general name additive, especially if they are specialists in the field of material science. In that case, they are more interested in the final product, while the specialists in the field of physical chemistry and catalysis are dealing more with the role and mechanism of action of a certain additive. Therefore, resolving the differences in terminology supported by the survey of experimental results from various authors was the main task of this paper and the authors believe that they have appropriately fulfilled this task.