**Response to reviewers’ comments**

We wish to express our appreciation to the reviewer for comments, which have helped us to improve our manuscript. According to the suggestions, we have thoroughly revised our manuscript and its final version is enclosed. Point-by-point responses to the comments are listed below.

**Reviewer:** „Information on antraquionone dyes treatment by peroxydisulfate in literature
is missing. References like: McCallum, Jeremy E. B.; Madison, Stephen A.;
Alkan, Sibel; Depinto, Richard L.; Wahl, Roy U. Rojas from Environmental
Science and Technology (2000), 34(24), 5157-5164, should be cited and
discussed.”

**Authors:** Within the suggested reference oxidative degradation of the textile dye RB 19 with thermally activated peroxydisulfate was done, in order to identify some of the major early degradation products. Different techniques (NMR, LC-MS, and Raman) were applied. Reaction mechanism of peroxydisulfate with the anthraquinone dye was proposed for initial attack and early step degradation. However, the paper was cited in the part effect of the initial pH value since similar results were obtained.

**Reviewer:** „The scheme of experimental setup is missing. It should be provided in SM.”

**Authors:** Scheme of used system with plug flow photoreactor was provided as Figure 1 (SM).

**Reviewer:** „Line 120. Please provide reference for the statement.”

**Authors:** The next reference was added C. [Almquist](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Almquist%2C+Catherine), S. [Fyda](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Fyda%2C+Sarah), N. [Godby](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Godby%2C+Nate), M. E. [Miller](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Miller%2C+Michael+E), An investigation on the use of ultraviolet light emitting diodes (UV LEDs) in a plug‐flow reactor for water treatment, [Environmental Progress and Sustainable Energy](https://ezproxy.nb.rs:2112/sourceid/17700156701?origin=resultslist), 36(3), 2017, 857-863, <https://doi.org/10.1002/ep.12525>

**Reviewer comments:**

* „Line 121. Please illustrate (in SM) the determination of the reaction
constant by using eq. 4 (plot t – ln C0/C). Provide R2 data.”
* „Line 141. Please provide for Figure 1, a plot C/C0 vs. time, to illustrate
changes during treatment (in SM).”

**Authors:** We would like to point out that in plug flow reactor decrease of the pollutant concentration over the length of reactor, takes place. Detention time *τ* was used in plug flow reactor, instead of time *t* in batch conditions. Detention time depends on the volume of reactor (fixed value) and flow rate (can be controlled with peristaltic pump). Bearing in mind that experiments (influence of the initial pH, the initial peroxydisulfate concentration and the dye concentration) were done with the same flow rates (same detention time), it is not possible to plot ln*c*0/*c* versus *τ*. Also, it is not possible to plot *c*/*c*0 versus time for Figure 1, since concentration in plug flow reactor could be measured only at the beginning and at the end of rector, and again experiments were done with the same flow rate.

Assuming steady-state conditions, first order kinetic equation can be used (as usually in AOPs studies), but in this case for plug flow reactor (equation 4).

Above mentioned equation was simple used for the calculation of first order rate constant as in study Almquist et al. 2017 (C. Almquist, S. Fyda, N. Godby, M. E. Miller, An investigation on the use of ultraviolet light emitting diodes (UV LEDs) in a plug‐flow reactor for water treatment, Environmental Progress and Sustainable Energy, 36(3), 2017, 857-863, https://doi.org/10.1002/ep.12525).

**Reviewer:** „According to the obtained results for flow rate effect it seems that batch
system should be considered. Is there any data from the batch system for the
comparison?”

**Authors:** First of all, we would like to say that the wastewater treatment experiments in our laboratory so far were done in batch system. Recently, we constructed plug flow reactor from quartz tubes and our goal was to test the degradation experiments in the continuous conditions. Both reactors have prons and cons, and the aim was not to compare them. It is important to note that complete decolorization of RB 19 dye could be obtained in both reactors under the optimal experimental conditions, which should be determined.

**Reviewer:** „The figure capture should be written in the following manner:  RB 19 residual concentrations after treatment with UV irradiation, S2O82- and UV/S2O82-. *c*0(RB 19) = 50 mg∙L-1, *c*0(S2O82-) = 0.1 mmol∙L-1, flow rate = 1.5 mL∙min-1, UV light intensity = 1950 μW∙cm–2, temperature = 25 ± 0.5 ºC.”

**Authors:** All figure captions through the manuscript were corrected.

**Reviewer:** „Figure 2 should be moved to SM. Also, Figure should be given in color or by
using different lines.”

**Authors:** The correction was done. Figure 2 is now in SM (Figure 3-SM) and lines in different color was used.

**Reviewer:** „Line 185. Is Reaction 5 from literature? Please provide proper reference if
and „Line 212. What about reactions 7 and 8? Literature?”

**Authors:** Reactions (5, 7 and 8) are from the literature, the appropriate citations were added.

**Reviewer:** „Line 225. It is not correct to give same data in Tables and Figures. I
suggest authors to prepare Figures which will contain data from Table II by
using secondary Y axe or inset option.”

**Authors:** All figures were prepared using option Multi-curve (Double Y). However, according to author guidelines, using secondary Y axe is not allowed. In case that Editor is not satisfied, we suggest to simple cut column RE from Table II-SM (because of repetition data for RE) and use previous version of figures.

**Reviewer:** „Line 266, Figure 5. Please correct bytil to butyl.”

**Authors:** This mistake was corrected.

**Reviewer:** „Line 292. References should be listed as 21,32,33 and Line 357. References should be listed as 17,19.”

**Authors:** Thank you for these comments. References were ordered from lower to higher number.

**Reviewer:** „Lines 356-357. Please correct the first and second sentence of the
Conclusion, since according to the presented results, almost complete color
removal was achieved (99%).”

**Authors:** The correction was made, we put: „This work showed that activation of peroxydisulfate with UV irradiation is efficient technology for removal of anthraquinone textile dye RB 19 from wastewater. Almost complete decolorisation of RB 19 dye solution was obtained under optimal operational conditions.”

**Reviewer:** „Line 137. Title: is there any proof that Ideal plug flow reactor was used?”

**Authors:** Thank you very much. Applied reactor is plug flow (reaktor sa klipnim proticanjem). Correction was made.

**Reviewer:** „Line 466. Ref. 32 includes Title?”

**Authors:** This mistake was corrected.

**Reviewer:** „English should be checked.”

**Authors:** The manuscript was checked and grammatical errors were corrected.