

Drink. Water Eng. Sci. Discuss., referee comment RC1  
<https://doi.org/10.5194/dwes-2020-35-RC1>, 2021  
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## Comment on dwes-2020-35

Anonymous Referee #1

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Referee comment on "Defluoridation of drinking water by modified natural zeolite with Cationic surfactant, in case of Ziway town, Ethiopia" by Dessalegn Geleta Ebsa and Adisu Befekadu Kebede, Drink. Water Eng. Sci. Discuss.,  
<https://doi.org/10.5194/dwes-2020-35-RC1>, 2021

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### Defluoridation of drinking water by modified natural zeolite with Cationic surfactant, in case of Ziway town, Ethiopia

I believe that the present paper contains interesting results, the structure of experimental and that of results and discussion should be substantially modified. Therefore, I think the manuscript could be accepted for publication after the following major issues are addressed. The whole manuscript revised once again - it has many grammatical, stylistic and typographical mistakes. English should be checked by native speaker. Concrete comments are shown as follows.

- Abstract

Line 17 and 18 – "by natural zeolite modified with a cationic surfactant in a batch system and Hexadecyl Trimethyl Ammonium Bromide were used for zeolite modification. The Batch experiments also conducted". The chemicals and batch experiment should not be written in capital. Abbreviation HDTMA should be here introduced for the first time.

Line 18 - " The Batch experiments also conducted to test for preferential removal of fluoride from water by surfactant-modified zeolite."

This is repetition and should be removed.

Overall English should be checked and corrected (just some of the examples):

Line 21 - "was influence"

Line 32 - "the most electronegative elements which have a negative charge"

Line 71 - "Drinking water samples will collects"

Line 74 - "A cross-sectional study was conducted to removes"

Line 78 - "cationic surfactants will analyzed by"

Line 124 - "were under took for adsorption"

Line 152 - "followed with lesser fluoride"

Line 24 - "The removal efficiency of the treatment was influence by pH of solution ( $5.5 \pm 0.2 - 8.5 \pm 0.2$ ), initial concentration of fluoride(1-10mg/L), dose of surfactant-modified zeolite (2.5-18 g/L), contact time (30-180 Minute), and effect of temperature

was investigated." - What is the temperature range that is being investigated?

Line 26 - Abbreviations that are mentioned for the first time in the abstract are not clear and confusing. What does Na-LSX, Na- LTA and ZR mean?

Line 27 - At what initial fluoride concentration was rapid fluoride removal?

## General remark

Numbering is incorrect. Introduction should be 1. It is confusing that Materials and methods suddenly start with 3. What happened with 2.?

## Introduction

- Line 33 - ions of group IA should be stated
- Line 36 – Introduction on fluoride and concentrations/ the values found in water should be added. Regulations by WHO should be added.
- Line 42 - “Thus, defluoridation of drinking water is the best alternative technology in order to reduce health menace.” –It is not clear why defluoridation is the best technology and alternative to which technologies?
- Explanation on why zeolite should be modified is missing and why HDTMA-Br?

## Materials and Methods

- Line 72 – “Drinking water samples will collect from sampling sites in the Batu town, mainly in the drinking water distribution system” – Where are exactly sampling points? What is the population?
- Line 74 –“A cross-sectional study was conducted to remove the concentration fluoride in the drinking water and defluoridation by using natural zeolite with cationic surfactant from community water supply and private tap of the town.”- In the manuscript the defluoridation was described by natural zeolite and modified. What is meant by cross-sectional study to remove fluoride? That should be better described.
- Line 79 – what are the standard procedures?
- Line 99 – How was composition and surface area determined? The procedure and measurements should be in detail explained in the materials and methods.
- Line 103 – Column experiments? There is no description on column experiments or details regarding the column and flow. This is completely out of nowhere.

## Results and discussion

- Line 113 – Once again what does LST, LTA and ZR means? The difference in the preparation of the samples should be described and mentioned in the materials and methods.
- Table 1 – What is the difference between unmodified zeolite? Why are the values changing? I assume those are different types of zeolites but it is not mentioned in the manuscript. Additionally list of elements should be the same in the all columns, following the same order.
- Big issue is that in line 97 only ONE zeolite type is mentioned. Where are all the other ones coming from? “The zeolite used in this study was a natural clinoptilolite-rich tuff obtained from the St. Cloud mine near Winston,”
- Line 126 – “variation of HDTMA dosages, at variation of pH, at variation of mixing time and the duration of adsorption in order to follow up best fluoride removal efficiency were considered.” Why is temperature here not mentioned and in abstract well?
- Figure 1 – typo it should be Blank and not Bank in legend
- Line 143 – Why was desorption present?
- Line 149 – “From Figure 4.1, a remarkable fluoride uptake was observed within the initial 30 minutes of runtime for all the zeolites” – Removal from 10 to 9.6, 9.4 mg/L wouldn’t call remarkable. I think that here should be written Figure 4.2 instead 4.1!
- Line 151 – “The synthesized zeolite from only laboratory reagents gave the highest fluoride removal (88.4 %) at the end of the 3 hours runtime. Zeolite Na-LSX and Na-LTA followed with lesser fluoride removals of 64.6 and 25% respectively” – Where are these results coming from? All the graphs go up to 120 min or 135 min!
- Line 155 – It should be figure 4.2 instead of 4.3. It is really confusing to read the manuscript where Figures don’t match with the text.
- Line 157 – “Probably, the interference from the OH<sup>-</sup> anions was reduced, providing additional free adsorption sites for the fluoride ions” – this should be supported with the literature.
- Figure 3 – Dosages of HDTMA should be reported in the materials and methods and not found in the label.
- Line 212 – “It is also observed that the 24 hours modification reaction time exhibited the highest fluoride removal potential (73%) whilst the 36 hours resulted in a slightly lower performance (73 %).” – 24h and 36h have both same removal! How can it be higher or lower?
- Line 219 – “ The effect of pH on fluoride uptake using modified zeolite Na-LSX was conducted considering” – Which modified zeolite was that? Which concentration was used?
- Figure 7 – it should be Na – LSX and not Na-LST
- Why were pH 8 and 9 not included? Maybe there would be still increase.
- Figures 7 and 8 are showing same data. However it is not clear where 88% removal is coming from! Additionally figure 7 shows the best removal at pH 7.5 while at Figure 8 at pH 5.5????? typo Ph should be corrected in the Figure 8 into pH!

