

## ***Interactive comment on “Review on Mineral Characterization of Precambrian Charnockites – using PIXE Technique” by Avupati Venkata Surya Satyanarayana et al.***

### **Anonymous Referee #2**

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In this paper is studied the possibilities of Particle Induced X-Ray Emission technique (PIXE) to characterize Charnockites from Visakhapatnam samples (India). It shows an exhaustive analysis comparing the results from PIXE with Atomic Absorption Spectrometry (AAS). The analysis includes elements presented in the rocks in low concentrations down to ppb (parts per billion). The study is interesting and can open a wide range of future studies.

Despite this, authors need to fix some errors and explain carefully some details:

\* The experimental details are properly explained and the data analysis is made with some software by a nonlinear least square algorithm. But no reference to any fitting

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parameter such as  $R^2$  is mentioned in the text. This should be included to have an idea of how good the data fits the curves.

\* Figures from 1 to 7 have been stretched horizontally and text in them is hardly read. Authors should consider to clarify this.

\* In lines 317 and 318 authors explain that by using modern advances in PIXE it is possible to eliminate the overlapping of peaks. But later, in the same page, they explain that the underestimation of concentration of certain elements can be explained by the overlapping of such peaks. Can this overlapping be eliminated or not? Authors must clarify this.

\* I encourage the authors to include the references with name and year between parentheses ("Precipitation increase was observed (Smith, 2009)..."), unless they were part of the sentence ("As we can see in the work of Smith (2009) the precipitation has increased"). Please read author indications in the web (<https://www.geoscientific-instrumentation-methods-and-data-systems.net/submission.html#references>)

\* Some typos need correction:

- Line 29 at the end: Phanerozoic
- Line 30 at the end: Cenozoic (or Caenozoic)
- Line 32 at the end: Phanerozoic
- sentence in lines 36 to 38 has no meaning.
- Also the sentence of lines 38 and 39 need to be rewritten.
- Sentence at lines 42 and 43 is not clear, it may need an "AND" between India and "IS" that according to the sentence should be "ARE".
- Line 45 at the end: need an "IS" somewhere.

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- Line 50: "...The rocks are FROM Precambrian age..."
- Line 89: consider use precision rather than precession.
- Line 124, at the end: consider using annotated rather than noted (famous)
- Sentence in lines 139, 140 and 141: This sentence cannot be understood.
- Line 181: consider editing the sentence to change the use of which ("... obtained by AAS are close to already published data...")
- Table 12: Oxygen must be capitalized. (*SiO<sub>2</sub>*)
- Line 301 at the end needs a verb.
- Line 310 at the end also needs a verb.
- Line 320: It cannot be used the form "there is" paired with "accuracies".
- Line 342: The sentence at the end needs some verb.
- Line 416: elements if (space)
- Line 643: background (eliminate space)
- Sentence beginning at the end of line 651: the use of "them" is not clear, and verb tenses must be related (past or present)
- Sentence beginning at line 655 cannot be understood.
- The end of sentence in lines 659 and 660 is not clear: high grade of metamorphic rocks? High grade of metamorphism?
- Sentence in lines 662 and 663 cannot be understood.

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\* Some parts of the text need to be rewritten because they are not clear. Specially the Abstract and the Conclusions are hard to be understood due to the lack of verbs. I encourage the authors to make an exhaustive revision of all the sections to avoid so much grammar errors.

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