

COVER LETTER

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Dear Editor of Indonesian Journal of Chemistry,

We wish to submit an original research article entitled **“Ground state energies of he-like ions using a simple parameter-free matrix method”** for consideration by Indonesian Journal of Chemistry. We hope that our article meets the publication standard of the journal.

We confirm that the written manuscript is original, and no part of it has been published before, nor is any part of it currently under consideration for publication elsewhere.

This study applies an analytic and numeric matrix method to solve the Schrodinger equation of he-like ions without any variational parameter to obtain reasonably accurate ground state energies of the ions. A new and simple analytic expression for the ground state energies of the ions was successfully derived in this work. This simple expression only depends on atomic number Z and was proven to be more accurate than some other simple methods reported in the literature, including the standard perturbation theory, uncertainty-variational principle and the geometrical model. Accuracy of the calculation was further improved using more hydrogenic basis states in the wave function in our numeric calculation. The matrix method used in this work was the first one reported in the literature without the use of variational parameter in the calculation of he-like ions' energies and therefore can be used as an alternative method to obtain reasonably accurate energies of two-electron atoms. This work also showed the importance of hydrogenic basis states in the calculation of energies of two-electron systems. We think the manuscript fits the scope of this journal, especially in the physical and theoretical chemistry section.

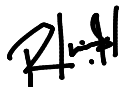
Please find below a list of potential reviewers for this work.

We have no conflicts of interest to disclose.

Please address all correspondence concerning this manuscript to me at rpingak@staf.undana.ac.id

Your consideration is very much appreciated. We are looking forward to your favorable reply.

Sincerely,



Redi Kristian Pingak

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