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| Book Name: | [**Chemical and Materials Sciences: Research Findings**](https://www.bookpi.org/bookstore/product/chemical-and-materials-sciences-research-findings-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4945** |
| Title of the Manuscript: | **Unusual chemical bond and spectrum of beryllium dimer in ground X1Σ+g state** |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**Journal of Quantitative Spectroscopy and Radiative Transfer, 262, March 2021, 107529.**

**Available:** [**https://doi.org/10.1016/j.jqsrt.2021.107529**](https://doi.org/10.1016/j.jqsrt.2021.107529)

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **The information obtained from this manuscript could be used by Laser Engineering Physicists and Laser Chemists to construct models of materials of Laser spectroscopy which is a versatile diagnostic tool for analytical applications and recent advances in semiconductor laser technology combined with selective and sensitive spectroscopic detection techniques that can lead to the development of new diagnostic tools for trace gas and isotope analysis, also the outcome of this study could open up experimental challenges on how to realize the Be2 materials with the assumed model properties, and it will contribute to existing knowledge and also serves as a reference material for researchers in laser beam on a sample yielding a characteristic light source that can be analyzed by a spectrometer.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **Yes, the article’s title is suitable.** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **The abstract is comprehensive enough, however, I suggest that the Author(s) should add the possible area(s) of applicability of this work and recommendation for future studies with respect to the unusual (or strange) breakthrough in the manuscript.** |  |
| **Is the manuscript scientifically, correct? Please write here.** | **The manuscript is scientifically correct. This is because it unveils the strange behaviours of Be2 which is of significant application to other elements that can be modelled as such.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | **The references are sufficient enough, however, I sugget that most recent works relating to this article may be added to upgrade the quality of this manuscript. Examples: [1] A. K. Guha, Oriented electric field stabilized beryllium dimer. International Journal of Quantum Chemistry, 16th May (2023);** [**https://doi.org/10.1002/qua.27138**](https://doi.org/10.1002/qua.27138)**.** **[2] F. Cong, L. Cai, J. Cheng, Z. Pu, and  X. Wang, Beryllium Dimer Reactions with Acetonitrile: Formation of Strong Be−Be Bonds, Molecules. 29(1), 177 (2024);**[**https://doi.org/10.3390/molecules29010177**](https://doi.org/10.3390/molecules29010177)**.** |  |
| Is the language/English quality of the article suitable for scholarly communications? | **Yes, the English quality of the article is suitable for scholarly communication.** |  |
| Optional/General comments | **This manuscript contains an outstanding research paper that goes beyond meeting basic requirements; it excels in terms of its originality, quality of research, and impact on the field. It contributes immensely to its field, engages in rigorous analysis, and effectively communicates its findings to both experts and a broader audience.**  **I therefore, recommend this manuscript for publication subject to minor corrections in section of abstract and references suggested in part 1 above.** |  |

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| **PART 2:** | | |
|  | Reviewer’s comment | Author’s comment *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** |  |  |

**Reviewers:**

**OTOR, Daniel Abi, Joseph Sarwuan Tarka University, Nigeria**