



## SDI Review Form 1.6

### **PART 1:**

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|--------------------------|-----------------------------------------------------------------------------|
| Journal Name:            | <a href="#">British Journal of Applied Science &amp; Technology</a>         |
| Manuscript Number:       | 2013_BJAST_3788                                                             |
| Title of the Manuscript: | Local Structure and Tracer Diffusion Mechanism in Amorphous Fe-based Alloys |

**General guideline for Peer Review process is available in this link:**

**(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)**

- This form has total 7 parts. Kindly note that you should use all the parts of this review form.



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### **PART 2:** Review Comments

|                                            | Reviewer's comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here) |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><u>Compulsory</u></b> REVISION comments | <ol style="list-style-type: none"> <li>1. The present manuscript is an extension of the earlier work (Ref.20) which was co-authored by the present author. The model incorporates a number of parameters. The success of the model depends upon the numerical values given to the parameters. A more complete discussion on the justification for values of the parameters used here should be given. For example, a value <math>10^{12}/\text{sec}</math> used appears too high for amorphous solid which is closer to the value for crystalline solid. Further, the vibration frequency of iron and boron atoms may not be the same.</li> <li>2. Arrhenius plot of diffusivity should be non-linear if the more one diffusing species are involved in the process of diffusion.</li> <li>3. Author considers two types of two types of relaxation processes-one with <math>\text{dr} = 0.4\text{\AA}</math> and another one with <math>\text{dr} = 0.02\text{\AA}</math>. He should clarify in what way they differ and what are activation energies associated with two processes.</li> <li>4. With respect to the potential energy diagram in Fig.4, author states that the barrier heights for bubble splitting may vary from 0.6eV to 3.2 eV. In this context, it should be noted that any potential barrier larger than a few tenths of electron volts cannot be crossed via</li> </ol> |                                                                                                                                                                               |



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|  | <p><b>thermal activation in the temperature ranges where metallic glasses are exist in a metastable state.</b></p> <p><b>5. According to the author, single vacancies are unstable in an amorphous matrix. However, experimental evidence exists which supports diffusion via single vacancies as in the case of crystalline solids.</b></p> |  |
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|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b><u>Minor</u></b> REVISION comments   | The language ( specifically, the grammer) of the needs to be reviewed and suitably revised. The word “simplex” has been used to describe a collection atom on a circum-sphere(CS). I think the word “complex” should be used instead.                                                                                                                                                                                                                                                                                                                                                           |  |
| <b><u>Optional/General</u></b> comments | <p>The authors should be encouraged to respond to comments made here . In addition, I suggest that the two additional reviewers may be requested to review the paper, offer their comments and point out areas where improvement is needed. Their names and addresses are given below:-</p> <ol style="list-style-type: none"> <li>1. Dr. D. Gupta, Emeritus Scientist, T.J. Watson Reserach Centre, IBM, New York .<br/>Email:dr Gupta11@gmail.com</li> <li>2. Prof. Himansu Jain.Dept. of Materials Science &amp; Engg., Leigh University, Bethelam, USA.<br/>Email:hj00@leigh.edu</li> </ol> |  |

**Reviewer Details:**

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|----------------------------------|-----------------------------------------------------------------------------|
| Name:                            | G.P. TIwari                                                                 |
| Department, University & Country | Ram rao Adik Institute of Tchnology, Vidya Nagri, Nerul. Navi Mumbai, India |