



SDI Review Form 1.6

Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_27184
Title of the Manuscript:	Magnetic properties of a quasi-two-dimensional Heisenberg antiferromagnet -RbCrF₄
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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



SDI Review Form 1.6

PART 1: 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)
Compulsory REVISION comments	<ol style="list-style-type: none"> The authors make a conclusion that there is a superstructure in the ab-plane due to the X-ray diffraction measurements. It is instructive to make a self-consistent analysis if this manifests itself in the magnetic susceptibility measurements. If done, the experimental data could be unified into a research article, otherwise it is only a experimental report. The authors used Fig. (2b) to demonstrate that they obtained a high-quality sample by using the RS-method. While there are two curves in this figure, it is hard to understand how we can make this conclusion. The susceptibility increases with lowering the temperature in the usual method measurement, and the authors explained this increase in terms of impurity-induced weak ferromagnetic moment. It is also hard to draw this conclusion. The authors should provide strong demonstrations. In Fig. (4a), there are two peaks showing up in the susceptibility vs. the temperature. A sharp one is claimed to be the Neel transition, while a broad one has not got a clear explanation. It is 	<p>We acknowledge the referee's effort to review our manuscript [Ms_PSIJ_27184]. We admit referee's comments to be reasonable and valuable.</p> <p>As referee's comments, we withdrew the discussion about the superstructure of RbCrF₄ because of no refinements. Furthermore, the splitting of XRD peak profiles in the inset of Fig. 2(a) was also withdrawn.</p> <p>However, the basic structure consists of a TlAlF₄-type structure and the XRD profiles agreed well with the <i>Pmmn</i> ($2a \times 2b \times c$) space group. Therefore, a good two-dimensionality is expected in RbCrF₄. This modified part is lines 109-113 in the revised manuscript.</p> <p>As referee's comments, we explained the difference below 15 K in lines 146-153 in the revised manuscript. Furthermore, we added the magnetic susceptibility in the several samples using the usual method and RS method in Fig. 2(b) in order to explain impurity-induce weak ferromagnetic moment. We think that the magnetic susceptibility data in Fig. 2(b) provide that the weak ferromagnetic moment and $T^* = 15$ K are extrinsic.</p> <p>In one- or two-dimensional antiferromagnets, a broad magnetic susceptibility peak always appears theoretically and experimentally: it is common sense in our fields. We</p>



SDI Review Form 1.6

	<p>not a right way to only package up the data for a scientific paper.</p> <p>4. And the authors should explain clearer about “g-value of each inequivalent magnetic site”.</p> <p>5. There are some places which should get minor modifications. The equation in line 180 should be modified. The form of equation is not standard. And language of some sentences should be modified, for example “...is because of...”.</p>	<p>added the reference [21] in the revised manuscript because unfamiliar readers are easy to understand.</p> <p>On the other hand, a sharp peak of magnetic susceptibility indicates magnetic phase transition: we roughly determine whether ferromagnetic or antiferromagnetic phase transition by magnetic moment below transition temperature. As already mentioned in lines 45-51 in the revised manuscript, CsVF₄ which consists of a TlAlF₄-type structure shows a sharp peak at an antiferromagnetic transition temperature. We concluded that a sharp peak corresponds to antiferromagnetic phase transition.</p> <p>We added the phrase “in antiferrodistortive CrF₆ octahedra”, because antiferrodistortive CrF₆ octahedra shows two kinds of distortion.</p> <p>We rewrote the equation and sentence in lines 209 and 212 in the revised manuscript, respectively.</p> <p>We believe that we have sincerely replied to the comments of the referee in the revised manuscript and that the present revised version of the manuscript is now worthy of publication as <i>Regular Articles in Physical science international journal</i>.</p>
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		