

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF CHEMISTRY
BERKELEY, CALIFORNIA

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Professor K. S. Krishnan
Indian Association for the Cultivation of Science
210 Bowbazar Street
Calcutta, India

Dear Professor Krishnan:

I was very pleased to learn of the results you have obtained with the crystals we were able to send you. You may keep the gadolinium and mix it with yttrium sulfate. We do not have any crystals of the more dilute compounds we have used in our low temperature experiments and in any case the crystals used were very small. At the present time all of our gadolinium is in the form of oxide or oxalate. The gadolinium phosphomolybdate tri-decahydrate would be the easiest to prepare in large crystals but it might be rather hard to handle without loss of water. We prepared our sample by precipitating gadolinium oxalate, igniting it to obtain the oxide, then adding the oxide to a solution of 12-phosphomolybdic acid (there are a series of phosphomolybdic acids one of which, $H_3PO_4 \cdot 12MoO_3$, is called 12). The preparation is not difficult and it is possible that you might convert your gadolinium into a suitable crystal. Phosphomolybdates are unstable and solutions should not be heated. Any necessary evaporation is best carried out by a stream of dry air or a vacuum or preferably a combination of both. Traces of dust or organic material may produce a bluish color through reduction of the molybdenum but if this occurs it can readily be reoxidized with a little hydrogen peroxide. While all of the above information is very well known to those who have studied the chemistry of the molybdic acids we wasted several days before we learned the procedure and I have mentioned the above only so that it might save you some time if you are interested in this compound.

I am sending you some reprints under separate cover.

With my best wishes for the continued success of your interesting and valuable work, I remain

Yours sincerely,

W. F. Giaque

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