How to get maximum efficiency from your Meltemp apparatus

The Meltemp apparatus is the small piece of equipment you have been using to determine melting and boiling points. We have two models in the lab - one has a black body and the other has a gray body. They both work in essentially the same manner.

Now that you will be doing more careful work with melting points, it would be a good idea to pick up some pointers concerning the Meltemp apparatus, particularly the correct power settings to use. Check out the graph below:

The y-axis corresponds to the expected melting temperature of whatever it is you are measuring. The x-axis corresponds to the power setting on the black-bodied Meltemp apparatus (the black-bodied apparatus has a power scale from 0 to 10 whereas the gray-bodied apparatus has a scale from 0 to 120. Obviously then, a setting of 5.0 on the black-bodied apparatus corresponds to a setting of 60 on the gray-bodied one). Normally, you want the apparatus to be heating at a rate of 2°C/min at the expected melting point of your compound. So for example, if you have a compound that should melt at 150°C, you find 150 on the y-axis and move over on the graph to the line that says “2°C/min”. That corresponds to a power setting of approximately 3.7. If you go ahead and set the apparatus to 3.7, you can feel safe that the heating rate will be 2°C/min at 150°C.

If you do not know the melting point of your compound, determine what we call a “ballistic” or “estimation” melting point, i.e. crank the heat to a setting of 6 to 8 and see what the approximate melting point is. Then use this approximate melting point value with the graph above to set the correct power level (after letting the apparatus cool). This method will save you a tremendous amount of time compared to slowly heating the apparatus over the whole temperature range (imagine if your unknown compound had a melting point >200°C)