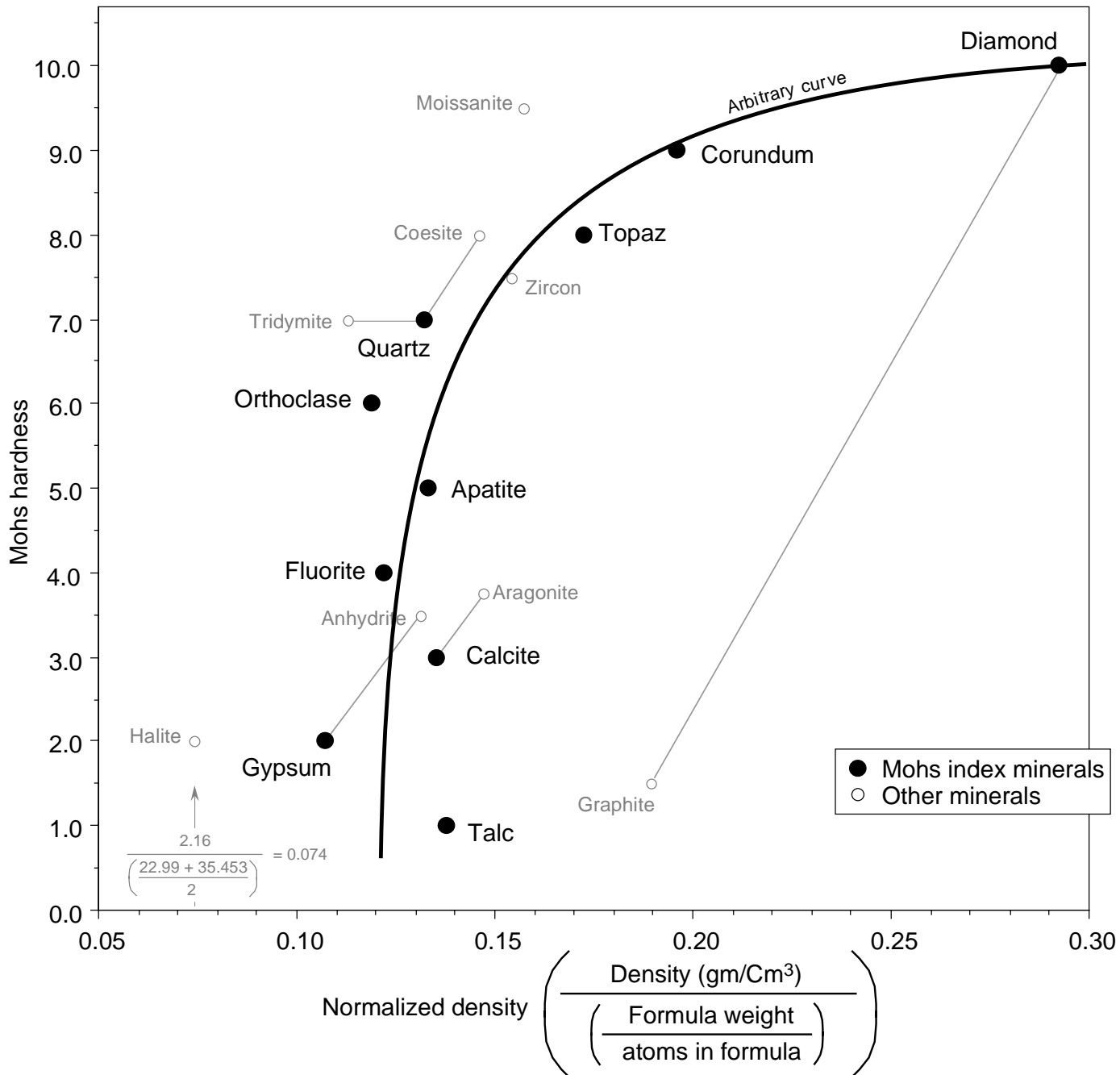


Density *and* hardness II: a look using normalized density



As we saw in Part I of this series, there is a very general correlation between density and hardness of minerals. This plot explores that relationship further, but normalizes density for atomic weight. For each mineral, the observed density is divided by the average atomic weight of the constituent atoms (and thus by formula weight divided by the number of atoms in the formula). As a simple example, consider calcite, where the formula weight is essentially 100 and the number of atoms in the formula is 5, giving an average atomic weight of 20. That, divided into the density (2.71) gives a normalized density of 0.135.

The resulting plot shows a tighter relationship than in Part I of this series. However, one might then ask why the relationship isn't linear. The answer is of course that the Mohs scale is not linear. To expect a linear relationship, we would need to plot hardness with a linear scale, as we will do in Part III.