SnH₄ Under Pressure:
New Structural Suggestions

Paulina Gonzalez, a graduate student in the Hoffmann group, has been studying SnH₄ structures at high pressures. One goal for many experimentalists and theoreticians has been to reach metallic hydrogen [1]. This remains elusive at pressures as high as ~ 300 GPa [2,3]. One approach is to look at hydrides that are “chemically precompressed” [4-6]; that is the reason for studying stannane.

Very little is known about the structure of stannane and as a starting point, we are using some structures previously proposed for silane, SiH₄ [7-9]. These structures were computationally optimized under pressures ranging from 0-290 GPa. A number of structures not seen for silane have emerged, among these a fascinating structure at 150GPa (see Figure 1), that contains molecular hydrogen units.

We are continuing our studies of this interesting system.

References: