I will describe a new class of solid state metalloproteins we have recently developed. Our strategy is to employ a recombinant coiled coil silk protein from honeybees as a de novo engineering scaffold. This recombinant protein can be produced at commercially viable levels, the protein sequence can be precisely manipulated using molecular biology, allowing very fine control over the properties of the heme-binding sites, and the protein can be fabricated in a variety of solid-state material forms such as films and sponges.