Phase change media are among the most promising materials in information technology. They are already employed in rewriteable optical data storage, where the pronounced difference of optical properties between the amorphous and crystalline state is used. This unconventional class of materials is also the basis of a storage concept to replace flash memory. This talk will discuss the unique material properties which characterize phase change materials. In particular, it will be shown that the crystalline state of phase change materials is characterized by the occurrence of resonant bonding, a particular flavour of covalent bonding [1]. This insight is employed to predict systematic property trends [2] and to develop non-volatile memories with DRAM-like switching speeds potentially paving the road towards a universal memory [3].