Cyclophanes are a class of molecules of longstanding interest. Our work in this area is focused primarily on the synthesis of pyrene-containing cyclophanes (pyrenophanes) using a valence isomerization / dehydrogenation (VID) reaction as a means of generating a pyrene system in a nonplanar conformation. A variety of pyrenophanes have been synthesized using this methodology and their structural parameters have been correlated with indices of aromaticity (HOMA and NICS) to establish how aromaticity is affected by deviation from planarity. The general approach to the pyrenophanes is also being employed in synthetic approaches to cyclophanes containing much larger polycyclic aromatic hydrocarbons that pyrene as well as aromatic (cyclophenacene-type) belts. We have also used cyclophanes in a very untraditional area, i.e. natural products synthesis. For example, transannular inverse electron demand Diels-Alder reaction of a [3](1,3)indolo[3,6]pyridazino-phane afford a pentacyclic heterocycle, which we have used in a concise formal total synthesis of (±)-strychnine.