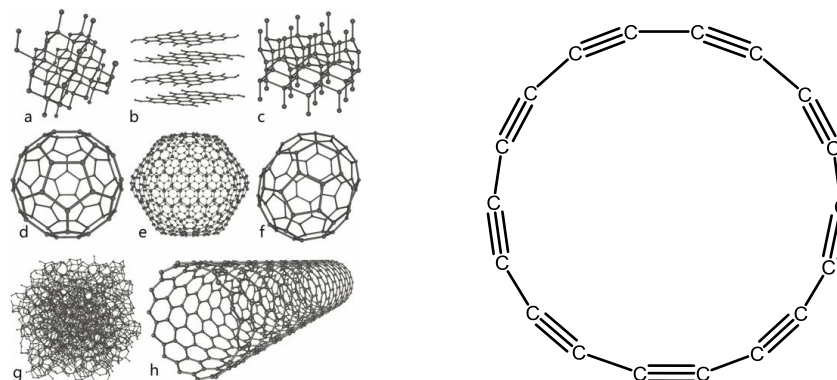
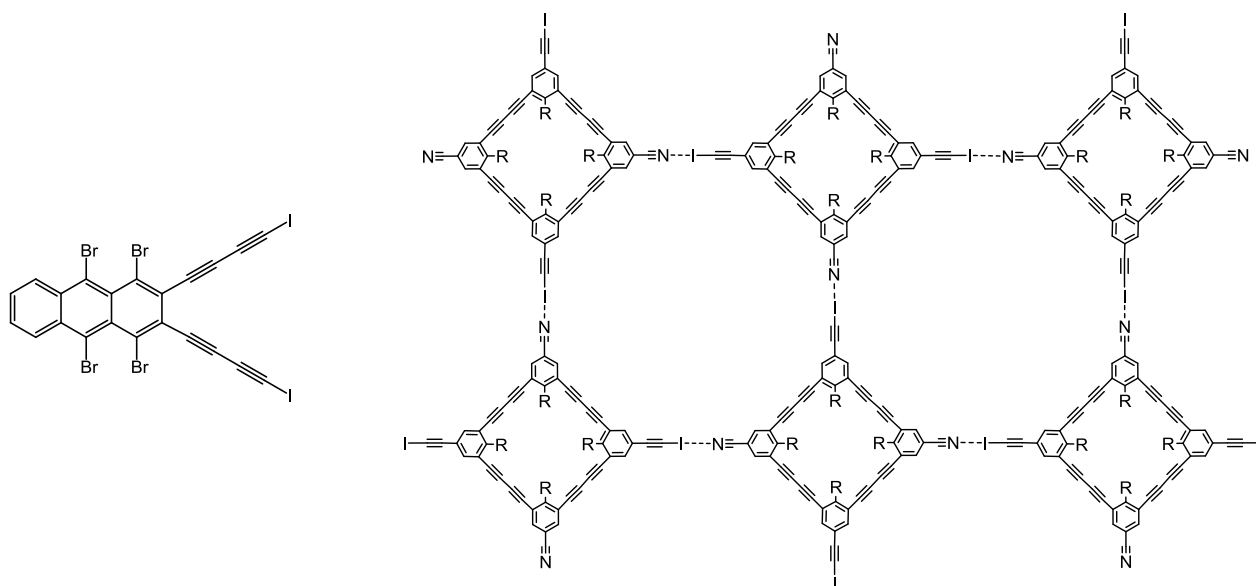


A search for new allotropic forms of carbon is an extremely exciting research area. This search has lately resulted in the discovery of Buckminsterfullerenes as well as carbon nanotubes and finally graphene. Apart from the most popular forms of carbon i.e. diamond and graphite, there are many more, some of which are presented in Figure 1 (left). The proposed research, apart from other goals, is also directed toward isolation and characterization of new form of carbon i.e. macrocyclic carbyne (Figure 1, right).



**Figure 1.** Selected forms of carbon: a) diamond, b) graphite, c) lonsdaleit, d) C<sub>60</sub>, e) C<sub>540</sub>, f) C<sub>70</sub>, g) amorphous carbon, h) SW nanotube (source: Wikipedia) and planned cyclic C<sub>18</sub> (right part).

Presented in the research proposal 1-halopolyynes belong to a group of so called carbon rich compounds and are supposed to have exceptional reactivity due to a presence of halogen atom directly linked to unsaturated  $-(C\equiv C)_n-$  fragment. In the course of the research project many new compounds will be obtained and new reaction protocols will be tested. For instance 1-halopolyynes will be used for the construction of polyaromatic systems as well as porous materials which will be designed. Its structure will be hold together by weak interactions i.e. halogen bonds.



**Figure 2.** Carbon rich polyaromatic system (left) and halogen bonded organic frameworks (XBOF).