Here’s another great example of synthesis of highly strained compounds. Bertrand has prepared the substituted triafulvalene 1. The compound is stable as a solid or in solution under inert gas. It does however react quickly with water, a remarkable addition of water across an alkene. This is understood in terms of a very high HOMO and a low LUMO, indicating a very reactive double bond. The UV/Vis corroborates this: its absorption is at 502nm, compared to 171nm of ethylene and 217nm of 1,3-butadiene. The B3LYP/6-31G(d) structure of the tetraphenyl derivative 2 is shown in Figure 1.
**Figure 1.** B3LYP/6-31G(d) optimized structure of 2.

Source: http://comporgchem.com/blog/?p=114