The strong spin-orbit coupling (SOC) effects in quantum materials can lead to new quantum phases, such as unconventional magnetism, quantum spin liquids, and topological superconductivity. Iridates have attracted a lot of attention in the field due to such novel physics phenomena. In this talk, I will present the new iridates we synthesized under high pressure. Moreover, I will talk about how to grow the single crystals of iridates under high pressure and high temperature.