One of the most remarkable achievements emanating from our own research laboratory in the last three years is the discovery of a topological triptych composed of three non-trivial structures, a [2]catenane ([2]C), a trefoil knot (TK) and a Solomon link (SK) in a wholly synthetic molecular form, from a simple pair of chelating ligands – a diformylpyridine (DFP) and a diaminobipyridine derivative (DAB). Interestingly, the crystal structure of the TK revealed the presence of two bromide anions residing in the center of a cationic trefoil knot. The anions are held in place by at least three CH…Br⁻ hydrogen bonds in the unique topological cavity of the TK. The unusual ability of the TK to host two bromide anions by rare virtue of pure CH hydrogen bonding, inspired an ongoing project where the binding affinity of the TK to anions with various sizes and shapes such as I⁻, Br⁻, Cl⁻, NO₂⁻, BF₄⁻, ClO₄⁻, PF₆⁻, among others is under investigation.

CBC SEMINAR ANNOUNCEMENT

Professor Ali Trabolsi
New York University Abu Dhabi

Metal-Organic Nontrivial Molecules: From Structure to Application

One of the most remarkable achievements emanating from our own research laboratory in the last three years is the discovery of a topological triptych composed of three non-trivial structures, a [2]catenane ([2]C), a trefoil knot (TK) and a Solomon link (SK) in a wholly synthetic molecular form, from a simple pair of chelating ligands – a diformylpyridine (DFP) and a diaminobipyridine derivative (DAB). Interestingly, the crystal structure of the TK revealed the presence of two bromide anions residing in the center of a cationic trefoil knot. The anions are held in place by at least three CH…Br⁻ hydrogen bonds in the unique topological cavity of the TK. The unusual ability of the TK to host two bromide anions by rare virtue of pure CH hydrogen bonding, inspired an ongoing project where the binding affinity of the TK to anions with various sizes and shapes such as I⁻, Br⁻, Cl⁻, NO₂⁻, BF₄⁻, ClO₄⁻, PF₆⁻, among others is under investigation.