Why knot? A synthetic strategy to access molecular knots and links

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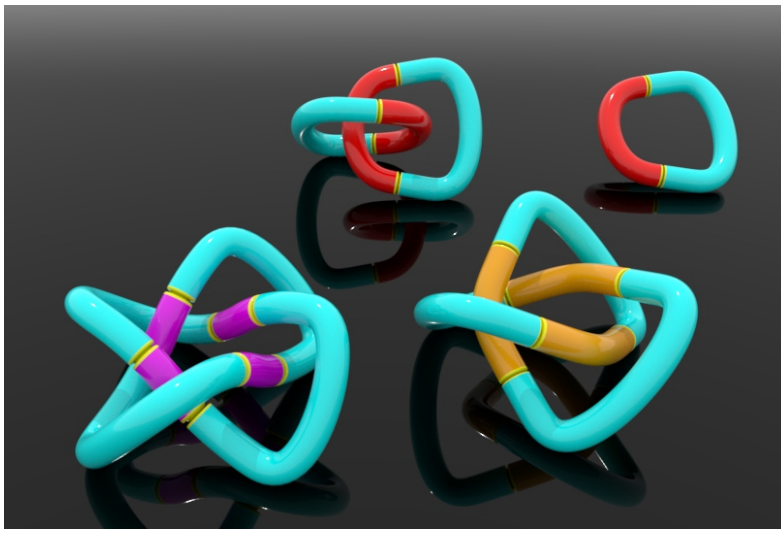
Forty years after the first synthesis of a trefoil knot, artificial molecular knots still remain extremely difficult to produce and their properties are nearly unexplored.[1-2] Traditional syntheses of molecular knots and links mostly consist in pre-organizing ligands using metal templation in organic solvents. In our group, we conceived an alternative strategy that does not require metal templation.[3,4] We designed a system that exploits the hydrophobic effect[5] to direct the formation of a wide range of interlocked architectures, among which a Hopf link, a Solomon link and a trefoil knot. The synthesis of all these structures is particularly easy and high-yielding. As we started to characterize these new molecules, we immediately came across some unexpected properties arising from their exotic topology. In this oral communication, we will relate our initiatory journey towards uncharted territories of molecular topology.



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