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MULTI-STEP SYNTHESIS OF A SUPRAMOLECULAR HOST MOLECULE FOR POLYOXOMETALATE GUESTS

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Supramolecular chemistry concerns intermolecular forces between chemical species in multi-component systems rather than bonding within individual molecules. One important subfield of supramolecular chemistry is anion recognition. Whereas the host-guest chemistry of common anions has been widely studied, the host guest chemistry of polyoxoanions is a relatively new field. This work involves the development of azamacrocyclic host molecules that can wrap around polyoxometalate guests. Through multi-step synthesis, triazacyclononane (TACN) has been prepared and two TACN units have been connected using a polymethylene strap. Both nucleophilic acyl substitution to a to a diacid chloride and nucleophilic substitution to a dialkyl halide have been employed in assembling the "earmuff" structures. Further research will involve varying the length of the polymethylene strap and studying interactions between the newly synthesized "earmuff" hosts and polyoxometalate guests.