

Advanced Crown Ether Synthesis Plant

Advanced Crown Ether Synthesis Plant is used to synthesize 4,4'(5')-[di t-butylidicyclohexano]-18-crown-6 (DTBDCH18C6). It is a highly selective ligand for recovery of Sr^{90} from high level radioactive waste for application to nuclear medicine as Y^{90} . ChED has synthesized 10 kg of the crude precursor DTBDB18C6 with 50-60% purity which is purified to 95% purity with 10% yield at 100g per batch scale. DTBDB18C6 is catalytically hydrogenated to synthesize 85% pure DTBDCH18C6. Scale up of the intermediate purification step for bulk synthesis in bench scale is in progress.



85 L Hastelloy reactor for crown ether precursor synthesis



Glass column purification system for crown ether



Pure precursor (DTBDB18C6)



Product crown ether (DTBDCH18C6)