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## **Synthesis of dibenzo-15-crown-5 - DMSO resin – silica used for isotopic separation of the lithium**

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Resumo:

The development of new materials and ligands based on crown ethers capable of mono- and binuclear coordination compounds, free or linked to silica matrices, has been studied by several authors for the isotopic separation of lithium 6/lithium 7. The present work shows the synthesis of dibenzo-15-crown-5 in high-purity silica gel polymeric material, pore size 60 Å, 70–230 mesh. B15C5 was dissolved in a mixture of 15 g of phenol in 250 mL of methanol and 100 mL of DMSO in a reaction vessel, and approximately 50 g of porous silica granules were added to the solution, which was stirred for approximately 10 minutes by a rotoevaporator shaker under reduced pressure at room temperature. After the evaporation of methanol, approximately 10 g of formalin, 70 mL of formic acid, and 1 mL of sulfuric acid were added to the reaction flask and left to form the polymerization for 24 h under reduced pressure at 70°C. The pressure decreased further near the boiling point of the reactant solution by

removing the reactant solution. The silica resins with a yellowish color were washed with water repeatedly until the neutral pH of the washing water was reached. The characterization of the dry resin spheres under reduced pressure was carried out via thermogravimetric analysis, infrared and ultraviolet spectroscopy, and nuclear magnetic resonance to verify the presence of carbon and hydrogen. The prepared material was placed in a chromatographic column positioned in series, forming stages, in the form of a cascade, for isotopic separation of the 99.98% purity lithium solution. Isotopic separation using the prepared material was evaluated by a quadrupole mass spectrometer.