

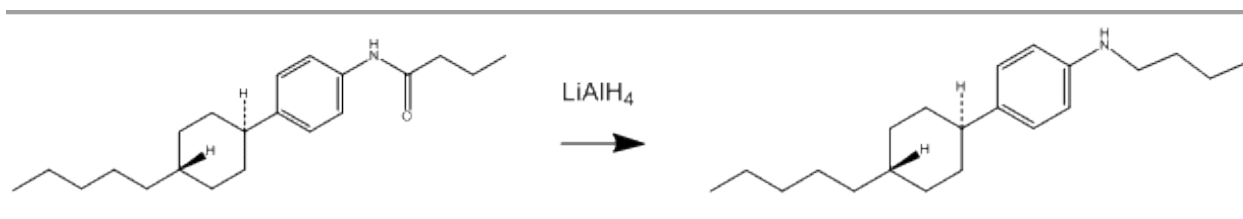
## Aromatic secondary amines from aromatic amides:

### N-Butyl-4-(trans-4-pentylcyclohexyl)aniline

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### Chemicals Used:

N-[4-(trans-4-Pentylcyclohexyl)phenyl]butanamide, prepared in high yield from the corresponding substituted aniline by reaction with butanoyl chloride, see primary reference 1.

Lithium aluminum hydride, Sigma Aldrich, powder, 95%, 19,987-7, freshly opened can.

Ether, Sigma Aldrich, anhydrous, 99+%, A.C.S. reagent, 17,926-4, freshly opened can.

Sodium sulfate, anhydrous, powder, 99+%, A.C.S. reagent, 23,859-7.

## **Procedure:**

These compounds were easily prepared in essentially quantitative yield by reduction of the previously described (reference 1) amides with lithium aluminum hydride in dry ether. A representative synthesis follows.

To a 50ml round bottom three neck flask, equipped with magnetic stirrer, water condenser, calcium chloride drying tube on top of the condenser, and nitrogen inlet was charged 25ml ether and 0.127 g (0.4 mmol) of N-(p-trans-pentylcyclohexyl)butanamide. The mixture was stirred until homogeneous. Lithium aluminum hydride (1.0 g, 26 mmol) was added and the mixture further stirred under nitrogen for 12 hours (overnight). Water was then slowly added dropwise to the solution via a 10 ml pressure equalized dropping funnel until a copious white precipitate separated with mild exotherm. The solution was then cooled to room temperature with an ice bath. The precipitate was suction filtered, washed with an additional 5 ml of ether, and the combined filtrate dried over ~2 g of anhydrous sodium sulfate for 2 hours. The dried ether solution was decanted to a 25 ml beaker, and the sulfate residue washed with an additional 2-3 ml of ether which was combined with the decanted ether solution. A boiling stone was added and the ether removed on a steam bath or warm water bath giving an essentially quantitative yield of N-butyl-(4-pentylcyclohexyl)aniline, a nematic liquid crystal.





Chemspider deposition:

<http://www.chemspider.com/Chemical-Structure.29354029.html>

**Keywords:** carbamate, amide, amine, aniline, acid chloride, secondary amine, reduction, lithium aluminum hydride