

Problem Set No. 9 (25.6.2013)

1. Generate the RAMP hydrazone (Enders method) starting from cyclohexanone and perform an alkylation with methyl iodide! Which enantiomer of 2-methylcyclohexanone will you receive in excess after the removal of the auxiliary?

2. a) Which stereoisomer do you expect when 2,2-dimethylhexan-3-one is deprotonated with LDA and subsequently silylated with ClSiMe_3 . Explain the observed selectivity!

b) How is LDA generated?

3. a) React lithium dimethylcuprate with (*S*)-4-methyl-2-cyclopenten-1-one and trap the intermediate with benzyl bromide! Which diastereomer will be formed in excess?

b) How is the cuprate generated?

4. The baker's yeast reduction of 3-oxobutanoic acid ethyl ester (= ethyl acetylacetoate) provides a secondary alcohol with good enantioselectivity. After treatment with 2 equivalents of LDA and subsequent quench with allyl bromide, the resulting product is again treated with 2 equivalents of LDA and then with methyl iodide. Which product do you expect?

5. The amide bearing an Evans auxiliary shown below can successfully be used to approach enantio-enriched α -amino acid carboxylic acid derivatives. Describe a sequences were the amino group is stereoselectively introduced by electrophilic amination! Suggest a method for the preparation of the enantiomer of this product!

