Summary in English

The aim of this study was to investigate the stereochemistry of *H*-phosphonates addition to several diimins. I concerned on stereoselective aspects of additions to imines bearing (*R*,*R*)-1,2-diaminocyclohexane moiety. As model compounds the derivatives of benzaldehyde, salicylaldehyde, 2-pirolkarboxaldehyde, 2-furfural and 2-thiophenecarboxaldehyde have been exploited.

In case of the derivatives of benzaldehyde and thiophenecarboxaldehyde the reactions were conducted under no-solvent conditions and the reaction mixtures were irradiated with microwaves. Aminophosphonates bearing pirolkarboxaldehyde and 2-furfural were obtained by simply mixing of the imine and appropriate *H*-phosphonate under ambient conditions for 24 hours. Derivatives s of the salicylaldehyde were synthesized with use of sodium hydride as base. This reaction was highly stereoselective (*de* up to 95%).

I have shown, that the sodium hydride methodology is limited to additions to imines in which the azomethine bond is in *ortho* position to -OH group. However, it is not required to use (*R*,*R*)-1,2-diaminocyklohexane based imines as reaction with α-methylobenzyloamine gave similar results.

In the text I have presented proposed reaction mechanisms, that explain the observed stereochemistry for different substrates.

Moreover, I have conducted experiments to test, whether the sodium hydride based method could be applied to imines, where there are two azomethine bonds neighbouring single -OH group. Positive results suggest that the method can be applied in such cases.