

## Abstract

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### **The reduction of the nitro group using a platinum catalyst in a flow reactor**

Diploma thesis

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Flow chemistry is a relatively new solution in the production of pharmaceutical materials. This thesis is dealing with the reduction of a nitro group on an aromatic nucleus for production of the new cytostatic agent using a flow reactor. The reaction is in progress using a platinum catalyst and hydrogen, which is generated by the electrolysis of distilled water. The theoretical part is mainly concentrated on the overview of flow systems, presents important variables for the course of the reaction in the flow, and there is also the digression to the flow chemistry. The next object of attention is the use of flow reactors in the context of green chemistry, but also the future of flow systems and their limits. The practical part contains information about the construction and setting options of the flow reactor together with data about the reaction scheme and all critical impurities. Very good results were achieved with a mixture of solvents dichlormethane and methanol under full hydrogen pressure. In some respects, we were able to overcome the outcomes of the preparation in a batch reactor. Specifically, we have managed to shorten the preparation time of the required substance and create a product with a lower content of impurities. The final discussion summarizes all reaction results and states relevant suggestions for optimizing the reduction depending on response factors.

Keywords: flow chemistry, nitro group, reduction, platinum catalyst, H-Cube, hydrogenation