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## **Scale-down and parallel operation of a riboflavin production process with *Bacillus subtilis***

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### **Abstract:**

This doctoral thesis is the result of research work carried out during four years at the Lehrstuhl für Bioverfahrenstechnik, Technische Universität München, Germany, under the supervision of Prof. Dr.-Ing. Dirk Weuster-Botz, in cooperation with DSM Nutritional Products (formerly Roche Vitamins), Basel, Switzerland.

The thesis is composed of seven chapters. The first one introduces the reader briefly to the area of bioprocess development relevant for this project. The thesis motivation and objective are described in the second chapter. The third chapter provides the theoretical background, upon which the discussion of the findings is based. The fourth chapter outlines the results of this project, which are summarized in the fifth chapter together with recommendations for future work. References can be found in the sixth chapter, before the final chapter provides a listing of the used symbols and abbreviations and details the applied materials and methods.