

## Sunday, 15 September 2019

19:00 Check-In and Dinner in Restaurant 'Pixhaier Mühle'

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20:00 Networking Event: Oberharzer Wasserregal and Mining History

## Monday, 16 September 2019

8:30 – 22:30

8:30 Welcome and Introduction

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9:00 Introduction Biomanufacturing Modelling

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10:00 Fermentation Modelling

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11:15 Lunch Break

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12:00 Institute - Guided Tour

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13:00 Chromatography Modelling

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13:45 Liquid-Liquid-Extraction (LL-Extraction) Modelling

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14:30 Membranes Modeling

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15:30 Experiments in the Laboratory  
Part I: Fermentation, Membranes, Chromatography, LL-Extraction

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18:30 Networking Event: Guided Tour Mining Museum and Dinner

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22:30 Return to Hotel 'Pixhaier Mühle'

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**Tuesday, 17 September 2019**

**8:30 – 24:00**

**8:30** Introduction into Fundamentals of Modeling and Simulation Software

**9:15** Experimental Model Parameter Determination

**10:15** Crystallization/Precipitation Modelling

**11:15** Lunch Break

**12:00** Experiments in the Laboratory  
Part II: Cryst./Precip, LL-Extraction, Lyophilization, PAT with PLS/PCA

**16:30** Networking Event: Guided Tour and Dinner in Goslar

**20:00 - 24:00** Midnight Session at Hotel 'Pixhauer Mühle':  
Simulation Tutorials Fermentation, Chromatography, Membranes, Extraction, Lyophilization,  
'Clausthaler-Mitternachtsschrei'

**Wednesday, 18 September 2019**

**8:30 – 15:30**

**8:30** Fundamentals QbD and PAT

**9:15** Cost Modelling

**10:15** GMP Regulatory Continuous Bioprocessing (CBP)

**11:15** Lunch Break

**12:00** Quality by Design (QbD) - Technology in Total Process Design

**12:45** Lyophilization

**13:30** CBP-Industrialization

**14:15** Process Analytical Technology (PAT) and Bioanalytics, Regulatory

**15:00** Discussion, Q&A

**15:30** End of Course