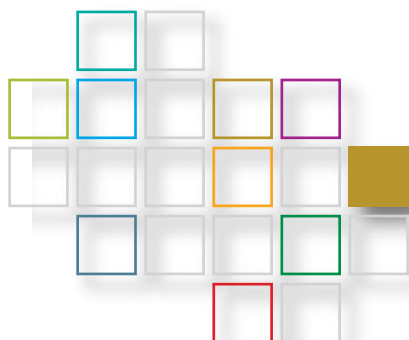


# 2D and 3D Printing – A new Trend in Pharmaceutical Manufacturing Hype or Future?



30 to 31 May 2017  
Berlin, Germany

Course No. 6694



## Hot Topics

### Target audience

This course is organized for scientists and decision makers who are interested in the possibilities of 2D and 3D printing in the pharmaceutical world.



### A seminar organized by the APV focus group „Solid Dosage Forms“

#### Objectives

The program includes in-depth information about available printing techniques as well as the production and current status of 2D and 3D printed drugs, medical devices, tissues, and organs. Finally, speakers from regulatory authorities and industry will give their opinion on regulatory considerations for these new technologies.

#### Goals of the workshop

Pharmaceutical (bio-)printing holds the promise of tailor made, highly individual dosage forms, implants and even tissues and organs. Within the last years, printing techniques and their application have been greatly improved. Reports in the media give the impression that artificial organs and individually printed dosage forms with specific release profiles and less side effects are close to the market introduction.

In this seminar, leading minds from academia, industry and regulatory authorities report the current status and hopes for pharmaceutical 2D and 3D (bio-)printing. Available printing techniques will be introduced and discussed in detail. Sessions cover the manufacturing of medical devices via 3D printing and legal aspects thereof as well as extensive information on tissue and organ printing. Recent achievements but also limitations in printed drug delivery systems are presented. The seminar ends with a session by speakers about the regulatory aspects of dosage form printing.

#### Organizing Committee

Julian Quodbach  
Lieven Baert  
Anne Seidlitz  
Maren Preis  
Andreas Gryczke  
Markus Thommes  
Peter Hölig  
Iris Ziegler

#### Program

Tuesday, 30 May 2017

12:30 to 17:30

##### Welcome and Introduction

Lieven Baert  
JALIMA PHARMA, Belgium  
Julian Quodbach  
Heinrich Heine University Düsseldorf, Germany

##### Session 1: Printing techniques

*Chairs: Lieven Baert and Julian Quodbach*

Overview over different printing techniques in pharmaceuticals (Inkjet, FDM, pastes, powder)  
*Jonathan Goole, University Brussels, Belgium*

Bioprinting techniques  
*speaker tbc*

Perspectives of 3D printing in industry  
*Frank Sievert, ratiopharm GmbH, Germany*

##### Session 2: Printing of dosage forms

*Chairs: Anne Seidlitz and Maren Preis*

Application of Fused Deposition Modeling (FDM) to the manufacturing of drug products  
*Alice Melocchi, University of Milan, Italy*

Extrusion based 3D printing of solid dosage forms  
*Clive Roberts, University of Nottingham, United Kingdom*

From 2D to 3D - ink-based printed dosage forms  
*Niklas Sandler, Abo Akademi University, Finland*

##### Social event dinner

##### Evening round table discussion

**Topic:** quality attributes and requirements for intermediates, final dosage forms, etc.

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## Program

Wednesday, 31 May 2017

09:00 to 16:30

### Session 3: Device and tissue engineering

*Chairs: Anne Seidlitz and Lieven Baert*

Approval process of medical devices

*Harald Rentschler, mdc medical device certification, Germany*

3D printed medical devices

*Marilys Blanchy, Rescoll, Pessac, France*

3D tissue printing

*Jordan S. Miller, Rice University Houston, USA*

3D printing of biodegradable scaffolds and tissue constructs

*Michael Gelinsky, TU Dresden, Germany*

### Session 4: Regulatory considerations for dosage form development

*Chairs: Maren Preis and Julian Quodbach*

Hot legal and regulatory issues of 3D printed medicinal products

*An Vijverman, Dewallens & Partners Law Firm, Belgium*

Industry perspective

*speaker tbc*

FDA perspective

*Akm Khairuzzaman, FDA, Office of Pharmaceutical Quality (OPQ), CDER, United States*

### Final discussion

*Program is subject to change*

## Course Leaders

### Julian Quodbach, Ph.D.



Julian Quodbach is a pharmacist by training and started his PhD in 2010 at the Institute of Pharmaceutics and Biopharmaceutics at the University of Düsseldorf under the supervision of Professor Peter Kleinebudde. He received his PhD in 2014 and began his work as postdoc in the group of Professor Jörg Breitzkreutz. During his postdoc, he developed an automated control system for fluid bed processes. Currently, he is supervising three PhD students and several master students who work on the progression of pharmaceutical 3D printing as well as the use of PAT in granulation processes.

### Lieven Baert, Ph.D.



Lieven Baert, Ph.D., M.B.A. Managing Director JALIMA PHARMA. Lieven has studied at the University of Ghent (Belgium) where he has obtained the degrees of Pharmacist, Industrial Pharmacist, Ph.D. in Pharmaceutical Technology and Master in Business and Administration. After a post doc at Merck Canada, Lieven has worked at Janssen Pharmaceutica for more than 10 years, where he held different positions, such as Manager Clinical Supplies, CM&C leader and Director Formulation group. Thereafter Lieven joined the sister company Tibotec where he became Senior Research Fellow / Vice President Early Development and Innovation. In 2007, Lieven was awarded the Johnson & Johnsons Philip B. Hoffman award for Scientists for his innovation work on novel dosage forms for anti-viral drugs. Lieven is inventor on 22 patents and is Flanders District of Creativity Fellow. Lieven started his own company "Jalima Pharma" in 2010.

### Contact Person of APV Headquarters

For further information please contact the course advisor:



Anna-Maria Pötzl  
Congresses and Course Management

Telefon: +49 (0) 61 31 97 69-85  
Email: poetzl@apv-mainz.de

## Location

Arcotel John F Berlin  
Werderscher Markt 11  
10117 Berlin  
Germany  
Phone: +49 30 405046-0  
Fax: +49 30 405046-100  
email:  
reservation.johnf@arcotelhotels.com

I herewith repealable authorise APV to use my E-mail address to send me APV relevant material including current program information. My acceptance can be cancelled at any time in writing.

## Date

**2D and 3D Printing – A new Trend in Pharmaceutical Manufacturing: Hype or Future?**  
Course no. 6694  
from 30 May 2017 12:30  
to 31 May 2017 16:30

## Registration

APV-Geschäftsstelle  
Kurfürstenstraße 59  
55118 Mainz/Germany  
Phone: +49 6131 9769-0  
Fax: +49 6131 9769-69  
e-mail: apv@apv-mainz.de

You will receive a confirmation of your registration with the invoice.

## Registration fee

Course no. 6694  
Industry 1490 EUR  
Authorities/Academia 745 EUR  
Students\* 178 EUR  
(free of VAT according to § 4,22 UStG)  
Coffee breaks, lunch, dinner and electronic proceedings included.

\*Limited places for full time students available; written evidence must be submitted.

## Hotel reservation

Arcotel John F Berlin  
Werderscher Markt 11  
10117 Berlin  
Germany  
Phone: +49 30 405046-0  
Fax: +49 30 405046-1981  
email:  
reservation.johnf@arcotelhotels.com

Participants should make their own hotel reservation referring to the APV seminar.

Deadline for special conference rate: 14 April 2017.

Special rate:  
Single room incl. breakfast buffet from 129 EUR per night.

Mainz, February 2017

## 2D and 3D Printing – A new Trend in Pharmaceutical Manufacturing: Hype or Future?, Course no. 6694

### Registration

As soon as you have found a seminar of your interest, it is very easy to register for it via fax, e-mail or online. We will process your registration promptly and certainly are available for any questions that may arise.

### Registration confirmation

After your registration was successfully processed, you will receive a confirmation.

### Before the event

A few days before the event starts, you will receive important information about the seminar, such as time, date, addresses etc.

### After the event

You will receive a certificate confirming your participation. Furthermore, we would like to ask you to fill-in our evaluation sheet to make sure we get better every time.

### Follow-up

After the event, we are open to receive any suggestions and critique that might arise during the seminar and will certainly help you with further questions you may have.

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