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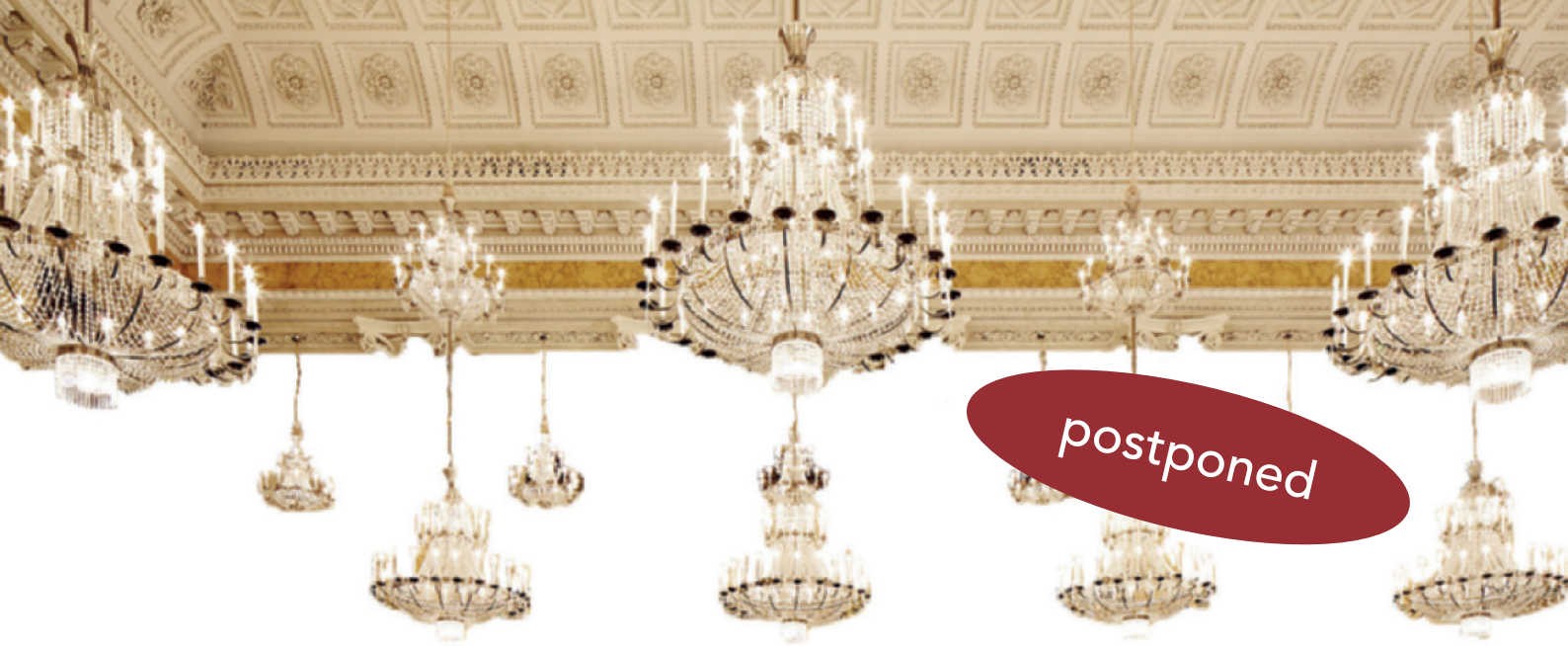
Nachrichten und Mitteilungen

02 · 2020

APV NEWS

International Association for Pharmaceutical Technology
Arbeitsgemeinschaft für Pharmazeutische Verfahrenstechnik e.V.
Gemeinnütziger wissenschaftlicher Verein



postponed

12th World Meeting on Pharmaceutics, Biopharmaceutics and Pharmaceutical Technology

Vienna, Austria

8 - 11 February 2021

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Lokale Gruppen

Mittwoch, 06. Mai 2020

Lokale APV-Gruppe Basel ab 18:30 Uhr im „Gifthüttli“, Schneidergasse 11, 4051 Basel (www.gifthuettli.ch/).

Anmeldung bis zum 01. Mai 2020 bei Dr. Lars Restetzki (lars.restetzki@roche.com).

Donnerstag, 07. Mai 2020

Lokale APV-Gruppe Rhein-Neckar

Weitere Informationen und Angaben zu den nächten Terminen erhalten Sie bei Dr. Viktoria Riedel (viktoria.riedel@schwabe.de).

Mittwoch, 27. Mai 2020

Lokale APV-Gruppe Rhein-Main ab 19:30 Uhr. Der Veranstaltungsort wird noch bekanntgegeben.

Weitere Informationen und Angaben zu dem Veranstaltungsort sowie den nächsten Terminen erhalten Sie bei Cathrin Pauly (pauly@aspiras.de).

Dienstag, 08. September 2020

Lokale APV-Gruppe Berlin

Weitere Informationen und Angaben zu den nächten Terminen erhalten Sie bei Dr. Andreas Sachse (andreas.sachse@cpl-sachse.de).

Lokale APV-Gruppe Westfalen

Weitere Informationen und Angaben zu den nächten Terminen erhalten Sie bei Dr. Johanna Anlahr (johanna.anlahr@bayer.com).

Lokale APV-Gruppe Nordrhein

Weitere Informationen und Angaben zu den nächten Terminen erhalten Sie bei Klaus Wening (klaus.wening@grunenthal.com).

Lokale APV-Gruppe Mecklenburg-Vorpommern

Weitere Informationen und Angaben zu den nächten Terminen erhalten Sie bei Katharina Tietz (katharina.tietz@uni-greifswald.de).

Lokale APV-Gruppe Oberbayern

Weitere Informationen und Angaben zu den nächsten Terminen erhalten Sie bei Dr. (USA) Julia Schulze-Nahrup (jsn@pharmoveo.de).

What´s hot in European Journal of Pharmaceutics and Biopharmaceutics?

Eduard Trenkenschuh, Ludwig-Maximilians-Universität, D-München

Liyun Yue et al./ European Journal of Pharmaceutics and Biopharmaceutics 146 (2020) 73-83

Brij-58, a potential injectable protein-stabilizer used in therapeutic protein formulation

Liyun Yue, Zhen Yan, Hao Li, Xun Liu, Piaoyang Sun

Polysorbates (PSs) are common protein stabilizers used in biotherapeutic formulations. However, PSs are heterogeneous and unstable in liquid protein formulations [1], [2]. The purpose of this work is to explore possible alternatives for polysorbate replacements that demonstrate superior protein protection, superior self-stability, low toxicity, and wide applicability. For this purpose, 8 non-ionic surfactants that have not yet been used as excipients in marketed biotherapeutic products were investigated with PS20/80 as the benchmark. Compared with PS20/80, Brij-58 showed better protein protection ability in the mAb1 formulation under forced degradation conditions when examined by visual inspection, SEC, and dynamic lighting scanning. Additionally, Brij-58 has a better inherent stability than PS20/80 in the protein formulation when detected by UPLC-CAD. Moreover, Brij-58 is an inert excipient that does not affect protein bioactivity and conformation. In addition, the LD50 and hemolysis concentration of Brij-58 were determined, which is relatively safe when used as a parenteral injection. Furthermore, Brij-58 was also an effective protein stabilizer for the other two antibody products (IgG4 subtype and bispecific antibody) in the shaking study. In summary, Brij-58 stands out as a promising PS replacement in biotherapeutic formulations with a safe, stable and effective protein-protection profile among candidate surfactants.

Benedikt Göttel et al./ European Journal of Pharmaceutics and Biopharmaceutics 146 (2020) 125-132

Electrospun nanofibers – A promising solid in-situ gelling alternative for ocular drug delivery

Benedikt Göttel, Juliana Martins de Souza e Silva, Cristine Santos de Oliveira, Frank Syrowatka, Miltiadis Fiorentzis, Anja Viestenz, Karsten Mäder

A serious problem of the treatment of eye diseases is the very short residence time of the drug. The majority of the drug is cleared within few seconds due to the poor capability of the eye to accommodate additional liquids. We developed a new ocular drug delivery system, which is applied in dry form and forms immediately a gel after administration. The system is based on gellan gum/pullulan electrospun nanofibers. The rheological behavior of the spinning solution was investigated followed by further characterization of the in situ formed gel. Three-dimensional X-ray imaging with nanometric resolution (nano-CT) and electron scanning microscopy were used for a detailed characterization of the diameter and alignment of the fibers. A high porosity (87.5 ± 0.5%) and pore interconnectivity (99%) was found. To ensure a good fit to the eye anatomy, the prepared fibers were shaped into curved geometries. Additionally, a new innovative moistening chamber for the in vitro determination of the ocular residence time in porcine eyes was developed which mimics the tear turnover. A clear prolongation of the fluorescein residence time compared to conventional eye drops was achieved with the application of the curved nanofiber in situ gelling mat. In summary, the developed in situ gelling system with adapted geometry is a promising alternative system for ocular drug delivery.

Kazuya Nomura et al./ European Journal of Pharmaceutics and Biopharmaceutics 147 (2020) 1-9

In situ monitoring of the crystalline state of active pharmaceutical ingredients during high-shear wet granulation using a low-frequency Raman probe

Kazuya Nomura, Varin Titapiwatanakun, Hiroshi Hisada, Tatsuo Koide, Toshiro Fukami

Optimization of manufacturing processes based on scientific evidence is important in the quality control of active pharmaceutical ingredients (APIs) and drug products, particularly when crystal forms change during production, which could affect subsequent drug performance. In this study, we verified crystalline states using various crystal faces and excipients during high-shear wet granulation based on non-contact low-frequency (LF) Raman probe monitoring. Four model drugs [indomethacin (IND), acetaminophen (APAP), theophylline (TP), and caffeine (CAF) polymorphs and cocrystals] were mixed with microcrystalline cellulose and hydroxypropyl cellulose with the addition of water over time. The LF Raman probe showed comparatively high sensitivity in monitoring 5–20% APAP and IND in a wet mass. Notably, as observed from the characteristic LF Raman peak shifts, form I TP and CAF and their cocrystals were more susceptible to transformation to the monohydrate form than form II. This method was also shown to be applicable in monitoring a commercial formulation of eight excipients and revealed crystalline transformations after 15 min of mixing. Therefore, probe-type LF Raman spectroscopy can be successfully employed to distinguish and monitor the crystalline state of APIs in real time during high-shear wet granulation, in which there is a risk of crystal transformation.

Tim Dreckmann et al./ European Journal of Pharmaceutics and Biopharmaceutics 147 (2020) 10-18

Low volume aseptic filling: Impact of pump systems on shear stress

Tim Dreckmann, Julien Boeuf, Imke-Sonja Ludwig, Jörg Lümkemann, Jörg Huwyler

Low volume aseptic filling of parenterals, particularly monoclonal antibodies is becoming increasingly important

with the development of more and more intravitreal drugs and high concentrated formulations. Especially monoclonal antibodies are very delicate products to fill and the use of the right fill finish equipment plays an important role during process development. Protein aggregation can occur under conditions described in literature and can be influenced by the fill finish processing. The mechanism of product stress inside the filling systems is yet not fully understood. This study evaluated three different dosing systems to assess protein degradation caused by the shear rate during low volume filling of monoclonal antibodies. The newly developed quantitative liposomal shear stress model revealed the highest shear rate in the radial peristaltic pump, followed by the rotary piston pump and the linear peristaltic pump. In contrast to that, we found the highest sub-visible particle counts (>2 µm) in the rotary piston pump. We used computational fluid dynamics for a better and deeper understanding of filling processes inside the different dosing systems. Our results document that the rotary piston pump creates a recirculation zone inside the cylinder, where the protein formulation could be trapped and be exposed to the shear stress multiple times resulting in a cumulative shearing. This finding could serve as an explanation for the highest sub-particle counts in low volume filling using a rotary piston pump.

Impressum:

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BMW 330e Limousine "Advantage" "UP" 215kW/292PS Systemleistung inkl. Automatic, Business Paket Professional, Driving Assistant, Durchladesystem, Tempomat, 17" LMR etc.	46.134,00 €	339,00 €
BMW X3 xDrive30e "Advantage" "UP" 215kW/292PS Systemleistung inkl. Business Paket Professional, Navi, Adapt. LED Scheinwerfer, Driving Assistant, PDC, 18" LMR V-Speiche 618 etc.	52.941,00 €	429,00 €
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VW Golf 8 Life 1,5l eTSI ACT OPF 110kW/150PS 7-Gang-DSG, inkl. Deep Black Perleffekt, Navi, LED-Scheinwerfer, ACC, PDC v+h, Tempomat, Klimaautomatik, 16" LMR "Norfolk" etc.	27.265,00 €	229,00 €