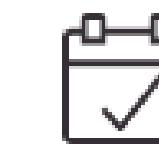




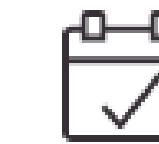


Tentative Program



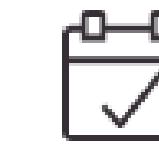
Wednesday, September 15

- Registration & Meet and Greet
- Official Opening and lectures
- Hands-on-Sessions / Park Systems AFMs*
- Evening Program



Thursday, September 16

- Lectures
- Hands-on-Sessions / Park Systems AFMs*
- Evening Program



Friday, September 17

- Lectures
- Hands-on-Sessions / Park Systems AFMs*
- Closing remarks
- End of conference

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Speakers



Dr. Thorsten Hugel

University Freiburg, Germany



Dr. Bizean Balzer

University Freiburg, Germany



Prof. Dr. Lukas Eng

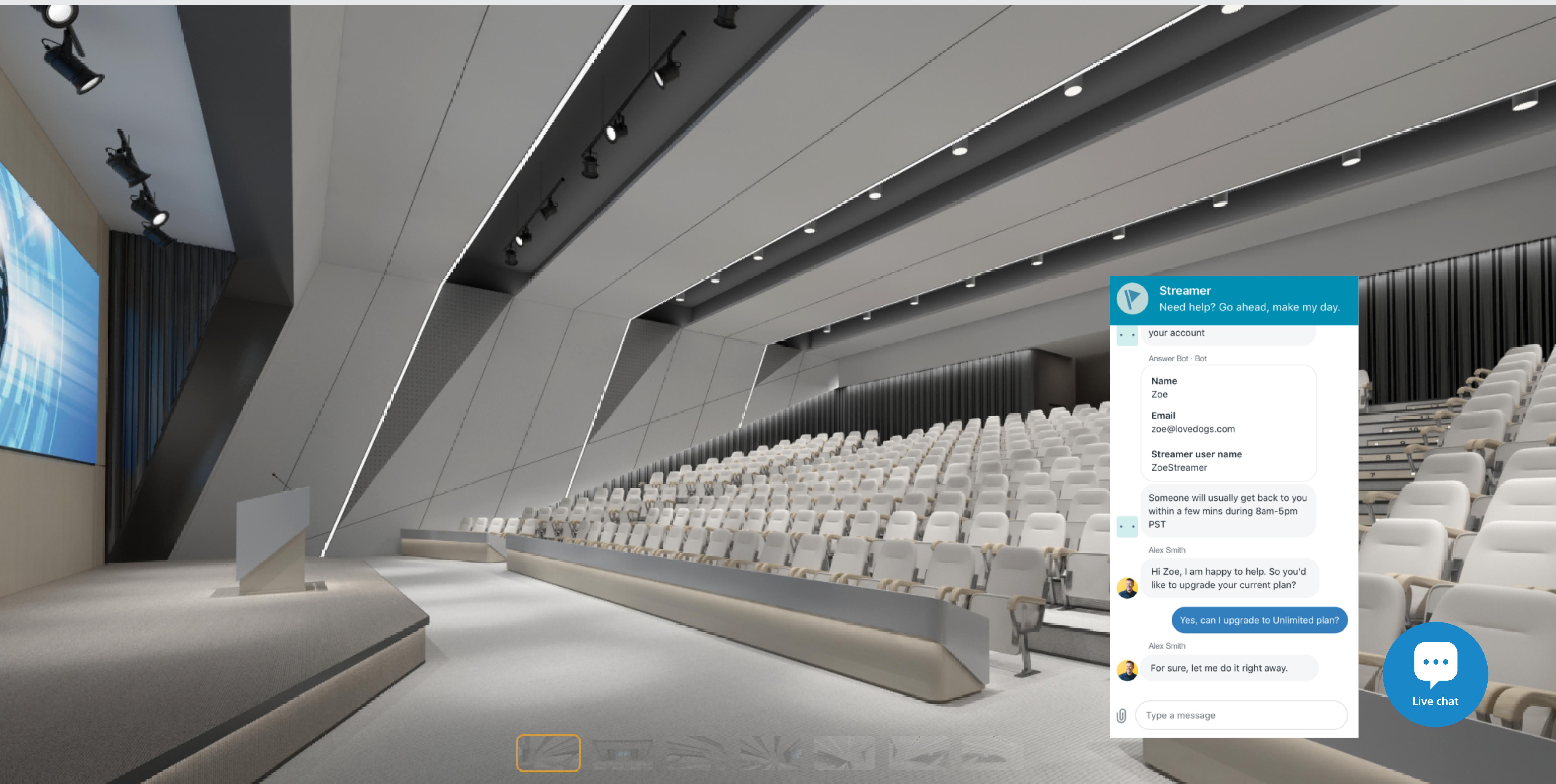
Technical University Dresden, Germany

["Comprehensive biomaterial characterization by AFM and fluorescence"](#)

["Single Molecule Friction"](#)

["Applying Sample Strain in-situ – A Multimodal Nanoscale Analysis including scanning probe microscopy"](#)





Live chat



P01-2020
Dino Parisotto
Environmental ^ Groundwater Consulting
Earth2Water Pty Ltd
“A Universe In A Drop Of Water”

P17-2020
Lynn Krushinski
Chemistry
Towson University
“ Ferrofluids for Hyperthermia Applications ”

P16-2020
Estephany Santiago
Center for Graduates and Research in Chemistry
National Technological Institute of Mexico / Tijuana Institute of Technology
“ Magnetic Nanoscavengers: the new trend to improve water quality ”

P14-2020 POSTER Singh.pdf
Lipid Coated Mesoporous Silica Nanoparticle Mediated Brain Targeted Delivery of Berberine: Preparation, Characterization, *In vitro* and *In vivo* Evaluation
Anurag Kumar Singh, Santosh Kumar Singh
Centre of Experimental Medicine & Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi - 221005, Uttar Pradesh, India
Presenting Authors Mail: anuragkumar.singh@bhu.ac.in

Introduction

✓ Drug delivery to the brain is limited due to the high selective permeability of blood brain barrier (1). This study was aimed to deliver berberine (a benzylisoquinoline alkaloid having low bioavailability, F = 0.68%) via lipid coated mesoporous silica nanoparticles (L-MSNs) to accomplish better anti-amyloidogenic effects in Alzheimer's disease (AD).

Methods

In the first step, MSNs were synthesized by modified Stober's method followed by drug loading (2). In the second step, liposomes were synthesized followed by lipid coating of drug loaded MSN particles by ultrasonication with liposomes. The liposomes were prepared by film hydration method (3). The physicochemical characterization of blank L-MSNs and berberine loaded L-MSNs (BBR-L-MSNs) was executed by evaluating entrapment efficiency, particle size, zeta potential, FT-IR, PXRD, TEM, HR-TEM, SEM and in vitro release study. The BBR-L-MSNs were also evaluated for ex vivo and in vivo pharmacokinetics study in Wistar rats.

Figures

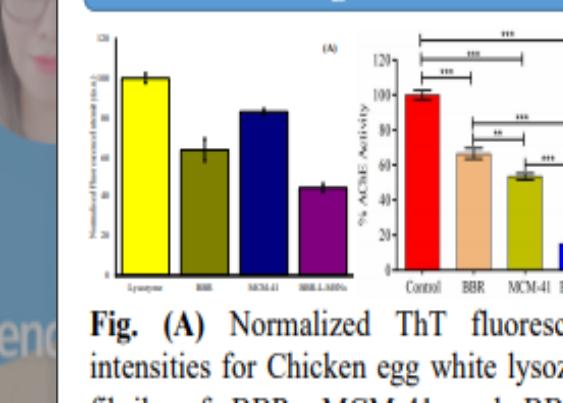


Fig. (A) Normalized ThT fluorescence intensities for Chicken egg white lysozyme (Lysozyme), BBR, MCM-41, and BBR-L-MSNs

Fig. Immunohistochemical staining to analyse the expression of BACE-1 in hippocampus of different experimental groups. Values are represented in the form of mean \pm SEM ($n = 5$). * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. Results were studied using the one-way ANOVA and further using the Newman-Keuls test.

Tables

Table 1. Results of pharmacokinetic study of berberine (BBR) from the BBR-L-MSNs formulations and BBR plain solution after intravenous administration in Swiss albino mice. Data presents mean \pm S.D., $n=3$.

Sample code	AUC ₀₋₂₄ (ng h/mL)	C _{max} (ng/L)	T _{max} (h)	MRT ₀₋₂₄ (h)
BBR-L-MSNs	2400 \pm 27.440	371 \pm 3.20	5.1 \pm 0.25	4.399 \pm 0.25
BBR	295.5 \pm 0.755	180 \pm 2.43	1.45 \pm 0.02	1.420 \pm 0.14

Table 2. Results of pharmacokinetic study of Donepezil (DZ) from the LAPDZ formulations and DZ plain solution after intravenous administration in Swiss albino mice. Data presents mean \pm SD ($n=3$).

Name	AUC ₀₋₂₄ (ng h/mL)	C _{max} (ng/L)	T _{max} (h)	MRT ₀₋₂₄ (h)
BBR-L-MSNs	2550.54 \pm 0.432	1310.32 \pm 0.032	5 \pm 0.451	5.321 \pm 0.124
BBR	1123.3 \pm 0.321	786 \pm 0.764	1.1 \pm 2.871	1.4 \pm 0.985

Analytical Data

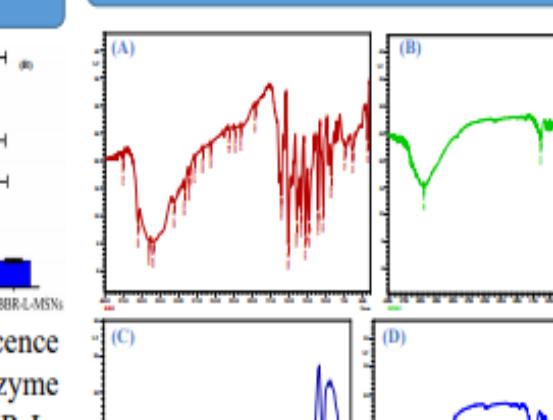
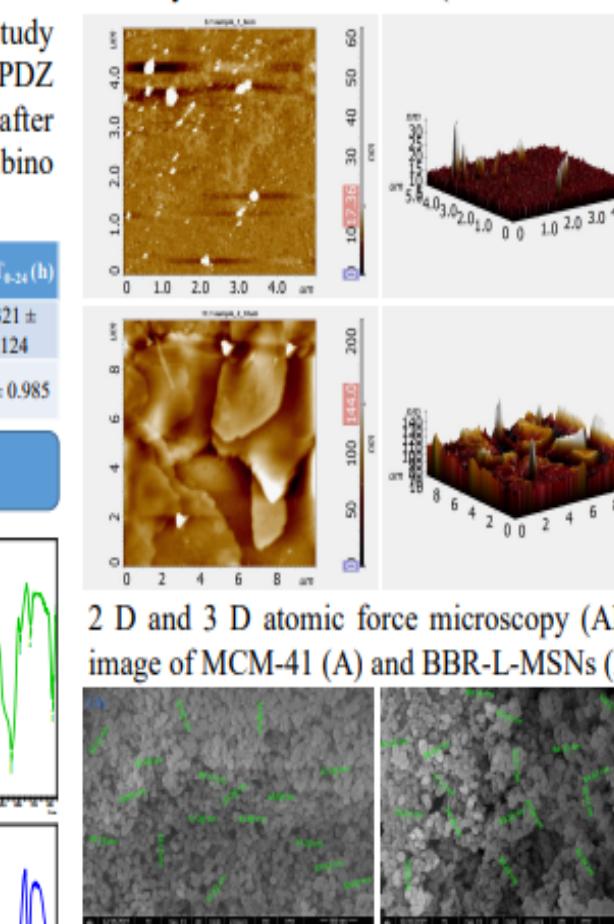


Fig. (B) Normalized ThT fluorescence intensities for MCM-41 and BBR-L-MSNs

to BBR through hemolytic studies. Low thioflavin T fluorescence of BBR-L-MSNs in contrast to L-MSNs and BBR indicates its anti-amyloidogenic effect. Percent AChE (acetylcholinesterase) inhibition ($p < 0.05$) values were $82 \pm 4.98\%$ (BBR- L-MSNs), $32 \pm 3.25\%$ (BBR) and $42 \pm 4.25\%$ (MCM-41). Expression of amyloid- β and BACE-1 proteins showed down regulation in the expression of BBR-L-MSNs group as compared to the scopolamine induced AD mice model. Plasma drug concentration AUC₀₋₂₄ (ng h/mL) for BBR-L-MSNs were prolonged (2550.54 ± 0.432) as compared to pure BBR solution (1123.3 ± 0.321). BBR-L-MSNs raised the maximum plasma concentration (C_{max}) and dropped the time to reach maximum plasma concentration (T_{max}) contrary to BBR. The promising outcome of BBR-L-MSNs indicated enhanced BBR delivery in Wistar rat's brain (almost 2 folds).



-2020
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“Lipid Coated Mesoporous Silica Nanoparticle Mediated Brain Targeted Delivery of Berberine: Preparation, Characterization, *In vitro* and *In vivo* Evaluation ”

-2020
Abhijith Gupta
Centre for Nanosciences and Nanotechnology
University of Mumbai
“Temperature dependent charge storage performance of carbon nano-onion supported layered MnO₂ nanosheets ”

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David Seber
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