



ANNUAL REPORT 2015

Greetings

Dear colleagues, alumni and friends of AVT, Another year has passed. As always, it was a year full of events and successes for AVT, as you can read in the following pages. The entire AVT is involved in many research projects addressing our key societal challenges. We continue to attract strong students to our B.Sc. and M.Sc. programs and to hire creative and hardworking researchers. We also have the pleasure to see our alumni move on to other positions in academia and industry. Two of our colleagues, Antje Spiess and Ahmed Ismail, have received and accepted tempting offers and decided to move on; we are sad to see them leave but also happy for their success. We are in the midst of the hiring process for a new W3 professor in Soft Matter Process Engineering. Moreover, we look forward to moving to NGP² within 2016 or early 2017, fingers crossed, and are preparing accordingly. We already have approval for basic equipment and our proposals for research equipment are under review. 2016 is surely going to be an exciting time at AVT. I wish you all a great 2016, and hope you will enjoy reading our progress and perhaps give us some feedback.

A. Mitsos

Prof. Alexander Mitsos, Ph.D.



© Thilo Vogel

Farewell to Prof. Ahmed E. Ismail, Ph.D.



© AVT

One of the sad events for AVT in 2015 was that Prof. Ahmed Ismail left us and joined West Virginia University in the USA. Prof. Ismail was a valued member of AVT and RWTH. Besides AVT, he was an active contributor in the TMFB Cluster-of-Excellence and AICES Graduate School. In addition to setting up a research group and teaching core and elective classes, he has established and participated in key activities for high school and undergraduate students. We regret that Prof. Ismail has left AVT, but at the same time we congratulate him on his new opportunity and wish him all the best in his new position. We are confident that we will have ample opportunity to interact with him in the future.

Farewell to Prof. Dr.-Ing. Antje Spiess



© AVT

When Prof. Antje Spiess accepted an offer as W3 professor and head of the Institute of Biochemical Engineering at the Technical University Braunschweig, a highly valued and appreciated member left AVT in autumn 2015. We sincerely congratulate her on this unique step in her career and wish her all the best and continued success.

Prof. Spiess was an instrumental member of AVT, first off as a group leader and then as a professor. She and her Chair of Enzyme Process Technology have been key players of AVT research and teaching. We are very grateful that Prof. Spiess will continue to supervise her group and former coworkers until completion of their PhD. Prof. Spiess was very active at RWTH, participating in numerous committees and collaborative research projects such as the TMFB Cluster-of-Excellence, the DFG Research Training Group BioNoCo or the SFB 985 Microgels.

Prof. Spiess had a substantial impact on AVT, not only in our scientific journeys into the process engineering based on biorenewable feedstocks, but also through her numerous contributions to our organizational growth. This created the typical spirit making AVT the productive and comfortable place we appreciate these days.

Even though her leaving AVT is a major loss for us, she and her group will surely be an important collaboration partner of AVT in the years to come.

New Website!

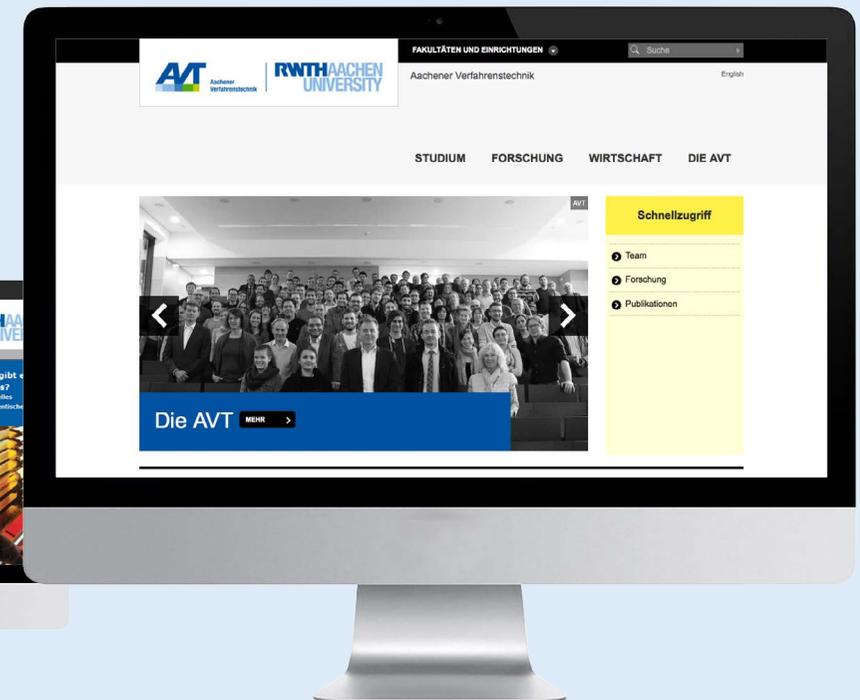
The web design of the AVT-website has been with us since 2008. Time for something new!

During the last years, RWTH Aachen University addressed overhauling their corporate design. For that reason, our letter and presentation templates had to undergo a detailed refinement already in 2014.

In 2015, the old web design was addressed by the AVT PR-group. At first, old contents were analyzed and a complete content revision was started. With the support of the central university administration the new website was reinstalled and is provided via the "Content Management System" of the RWTH since November 23rd, 2015. We hope that the new design and content keeps you up to date even better than before.

AFTER:

BEFORE:



NGP²



© AVT

We will remember 2015 as an exciting year for our new home NGP²: The structural building work was completed which the NGP² team celebrated together with representatives from the city, ministries as well as with the rector Prof. Schmachtenberg. Some of us were able to get a glance at our new rooms in NGP² and had a look at a model laboratory in August. More and more facade elements are currently mounted finishing the buildings body. Now the work focuses on the functionalities inside: the proposal for our office equipment and lab interior was granted, the design of the biorefinery is completed and the application for the grant is at the ministry. Just as this annual reflection is written, a finishing touch is put on the DFG proposal for large equipment in the biorefinery.

Even though our final move to NGP² will be delayed by a bit, an AVT moving team was already formed with representatives from every chair. Together, we will now prepare thoroughly so that we are ready when our new home will open its gates for us at the end of 2016.

Aachener Sakebrauer



© David Flitsch

The “Aachener Sakebrauer”, a group of students and PhD candidates, participated with pride and great devotion at the international brewing contest in Hamburg. Already for the sixth time the contest brought together several process engineering institutes as well as private brewing groups to compete on their art of brewing. Due to the great popularity of the international brewing contest, the number of participating brewing groups had to be limited to 16. Since the first international brewing contest in 2010 the “Aachener Sake” counts as the only group who participates with sake instead of beer. Nevertheless, this year the surprise was finally made perfect: the expert jury was convinced of the Sake and chose our drink to be the best brew! This award was a huge and wonderful surprise for all of us. A nice add-on to this incredible honor was winning a second award “life and soul of the party”, which we now won in consecutive years!

Lousberg Run 2015

The Lousberg run is an annual public running event in Aachen with more than 2000 participants. The AVT team has been steadily growing over the years from less than 50 runners in 2008 to 150 runners in 2015. All the runners were registered by Suzana, Laura and their very much appreciated helpers. Thanks to the matching headbands and T-shirts, provided

by our official sponsor BASF, the AVT runners were widely visible and recognizable as a team.

Rüdiger Ohs of EPT finished first of the AVT team; he covered 5 kilometers and 555 meters in 20 minutes and 33 seconds. The first female AVT runner to cross the finish line was Martina Mühlmann of BioVT after 26 minutes and 48 seconds.

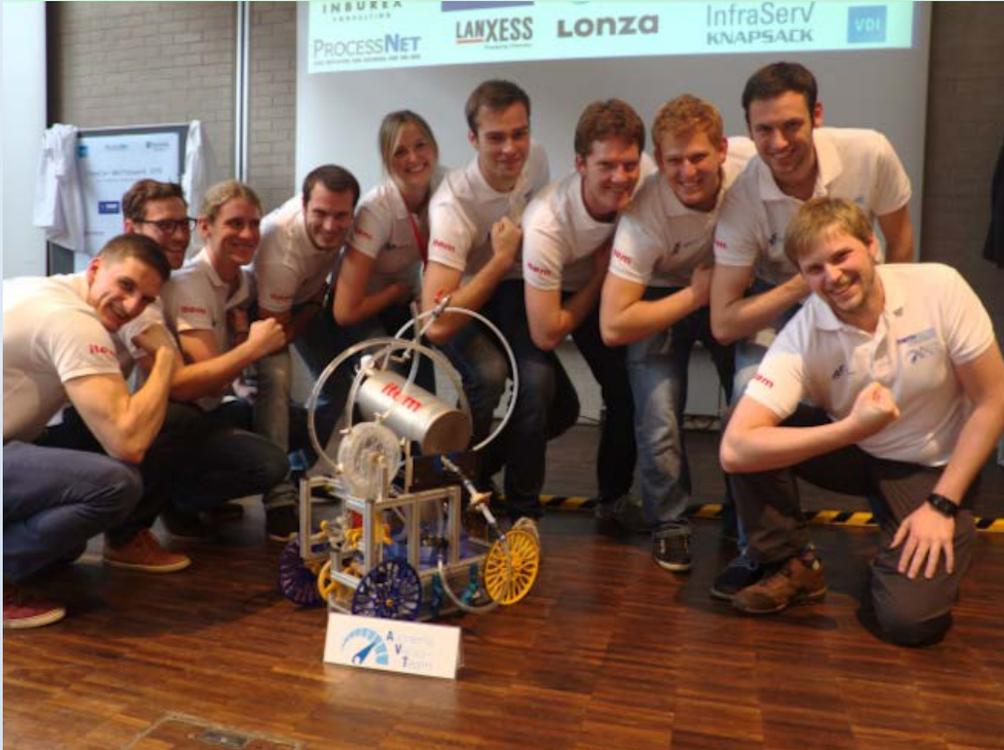
We would like to use this opportunity to thank BASF for sponsoring our team in a great manner!

Sponsoring the next AVT-Lousberg team in 2016 is still open for supscription.



AVT-Students at ChemCar Challenge

"Same procedure as last year?" - Freddie Frinton (1963)



© 4FFK media

Every year since 2006, student teams from all over Europe meet for the ChemCar challenge hosted at the ProcessNET Jahrestagung.

Every year the teams build a novel, wine crate-sized, chemically driven car to compete with one another.

Every year one team wins the ChemCar trophy for the most innovative, safe and accurate car.

In September 2015, the AVT team "Aixtreme VelociTeam" took their car "Lisbeth" to Bamberg. Lisbeth was powered by a hydrogen peroxide decomposition reaction, pressurizing water for the turbine. One of the highlights, besides the water jet optimized pelton turbine, was Lisbeth's continuously variable transmission controlled by a centrifugal governor for coping the starting torque – a common point-of-failure in the ChemCar challenges. Many of Lisbeth's parts were 3D printed in house at AVT.CVT 3D-FabLab.

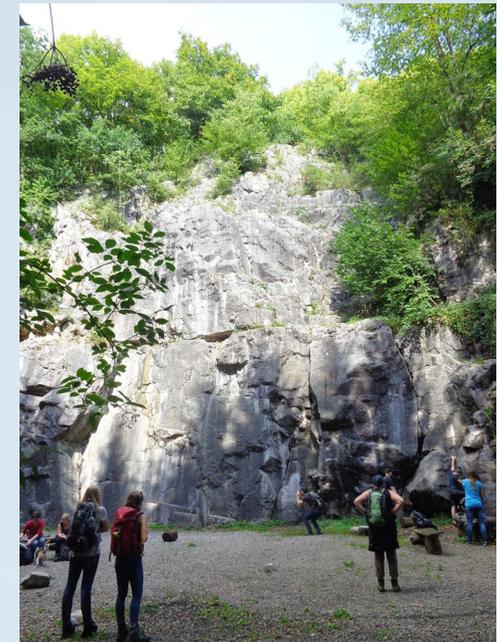
The draw defined to cover a distance of 8.5 m. Lisbeth's first run of 8.13 m directly got the team in the pole position. After the second of the two runs, in which Lisbeth drove only 5.44 m due to a failure of the safety burst disc, FH Münster took over the first place by a whisker. However, the committee rated the sophisticated drive-train and the innovative safety burst disc mechanism higher than the peltier element of FH Münster. Therefore, the "Aixtreme VelociTeam" won the ChemCar again, just like in 2014!

AVT Wandertag



© Preet Joy

28 legs started a hike through forests, across fields, meadows and creeks, passing lakes, castles and climbing rocks, shortly behind the Belgian border near Kelmis. The weather was great, the trail full of variety and everyone was rewarded with a cold beer at the final rest of the tour. It was a wonderful afternoon to catch a breath besides the general AVT duties. The photos speak for themselves:



Branntwein AG

RWTH Aachen's "Branntwein AG" – producing your own brandy, since 1998



© AVT

For eighteen years now, the RWTH Aachen University has successfully conducted the academic course "Branntwein AG". Students are offered the opportunity to produce their own brandy. Meanwhile, they are acquiring comprehensible knowledge of different manufacturing processes, legal regularities and customs duty.

This term, 28 ambitious students seized the opportunity to participate in the course. The AVT.FVT provided qualified specialists, a state-of-the-art laboratory, appropriate instruments and the needed knowledge. Furthermore, the Zentis GmbH & Co. KG donated 70 kg of fruit to be fermented to wine. The students challenged with the task of "self-organization" formed different groups targeting production of wine and brandy as well as the professional web presence of the course. To test their newly gained knowledge and to learn more about process engineering in food industry, the course took an excursion to Düsseldorf. In Düsseldorf they visited the corn distillery "Schmittmann" and the brewery "Schumacher". The students have successfully participated in the course and are proud to present a sweet currant wine and a brandy with currant and blackberry flavours.

New Colleagues

BioVT

Prof. Dr.-Ing. J. Büchs

Antje Staaden

Benedikt Heyman

Markus Müller

Janina Müller

Kyra Hoffmann

Timm Keil

Sebastian Pettirsch

Robin Lamm

Maximilian Schelden

Tobias Habicher

CSB

Prof. Dr. rer. nat. W. Wiechert

Viola Pooth

Eirini Velali

Niklas Tenheaf

Reinhard Oeggli

Christoph Westerwalbesloh

CVT

Prof. Dr.-Ing. M. Wessling

Dr. Manuel César Martí

Elizaveta Evdochenko

Morten Logemann

Dr. Oded Nir

Johannes Lohaus

Dr. Wojciech Ogieglo

Korcan Percin

EPT

Prof. Dr.-Ing. A. C. Spiess

(provisional head: Prof. Dr.-Ing Jochen Büchs)

Anne Lunze

Tim Jestel

SVT

Prof. A. Mitsos, Ph.D.

Johannes Faust

Wolfgang Huster

Daniel Penner

Yannic Vaupel

Dr. Ung Lee

Jaromiř Najman

MSB

Prof. Dr. D. Kohlheyer

Eugen Kaganovitch

New Colleagues, cont.

FVT

Prof. Dr.-Ing. A. Jupke

Manuel Lück

Maximilian Aigner

Miriam Faulde

Martin Leipnitz

Peter Kucmierczyk

Benedikt Weber

Thomas Wolter

MVT

Prof. em. Dr.-Ing. M. Modigell

Fabian Pech

Doctorates

SVT (former PT)

Prof. A. Mitsos, Ph.D.
(Prof. Dr.-Ing. W. Marquardt)

Dr. Danan Wicaksono

Dr. Mirko Skiborowski

Dr. Fady Assassa

Dr. Diego Munoz

Dr. Inga Wolf

Dr. David Elixmann

Dr. Reinout Romijn

Dr. Matthias Johannink

CVT

Prof. Dr.-Ing. M. Wessling

Dr. Kurt Kugler

Dr. Tim Femmer

Dr. Stefanie Krischer

Dr. Stefanie Hoffmann (geb. Postel)

CSB

Prof. Dr. rer. nat. W. Wiechert

Dr. Simon Unthan

BioVT

Prof. Dr.-Ing. J. Büchs

Dr. Kristina Meier

Dr. Natalie Rahmen

Dr. Bettina Luchterhand

Dr. Andreas Daub

Congratulations!

Awards

BioVT

Prof. Dr.-Ing. J. Büchs

Prof. Jochen Büchs 2nd Education Award of the student representatives

Prof. Jochen Büchs, 1st Place "Innovation Award RWTH Aachen University"
Prof. Uwe Conrath,
Jana Schilling,
Britta Schillheim

SVT

Prof. A. Mitsos, Ph.D.

David Elixmann, Best Paper Award of the magazine „at-Automatisie-
Jennifer Puschke, rungstechnik“ in the category „Tools“ in 2014
Holger Scheu,
René Schneider,
Inga J. Wolf,
Wolfgang Marquardt

Joern Viell Borchers Plakette 2015

Prof. Mitsos, JOGO – Best Paper Award 2014
A. Tsoukalas

FVT

Prof. Dr.-Ing. A. Jupke

Tim Maßmann Award for his master thesis, SEW Stiftung

MSB

Prof. Dr. D. Kohlheyer

Dr. Alexander Grünberger PhD Award, VAAM/Marburg,
Helmholtz PhD-Scholarship

Conferences and Symposia

CVT

Prof. Dr.-Ing. M. Wessling

Membrane Course for Water Technologies – Jun 1-3

40 participants

Euromembrane – Sep 6-10

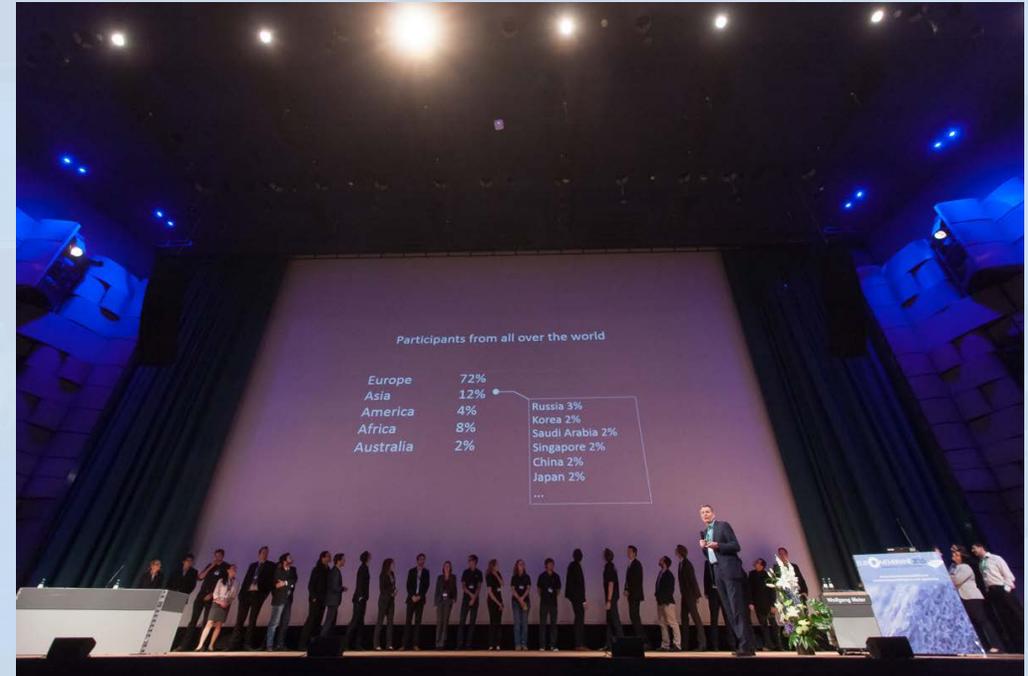
700 participants

Network of Young Membrains – Sep 4-5

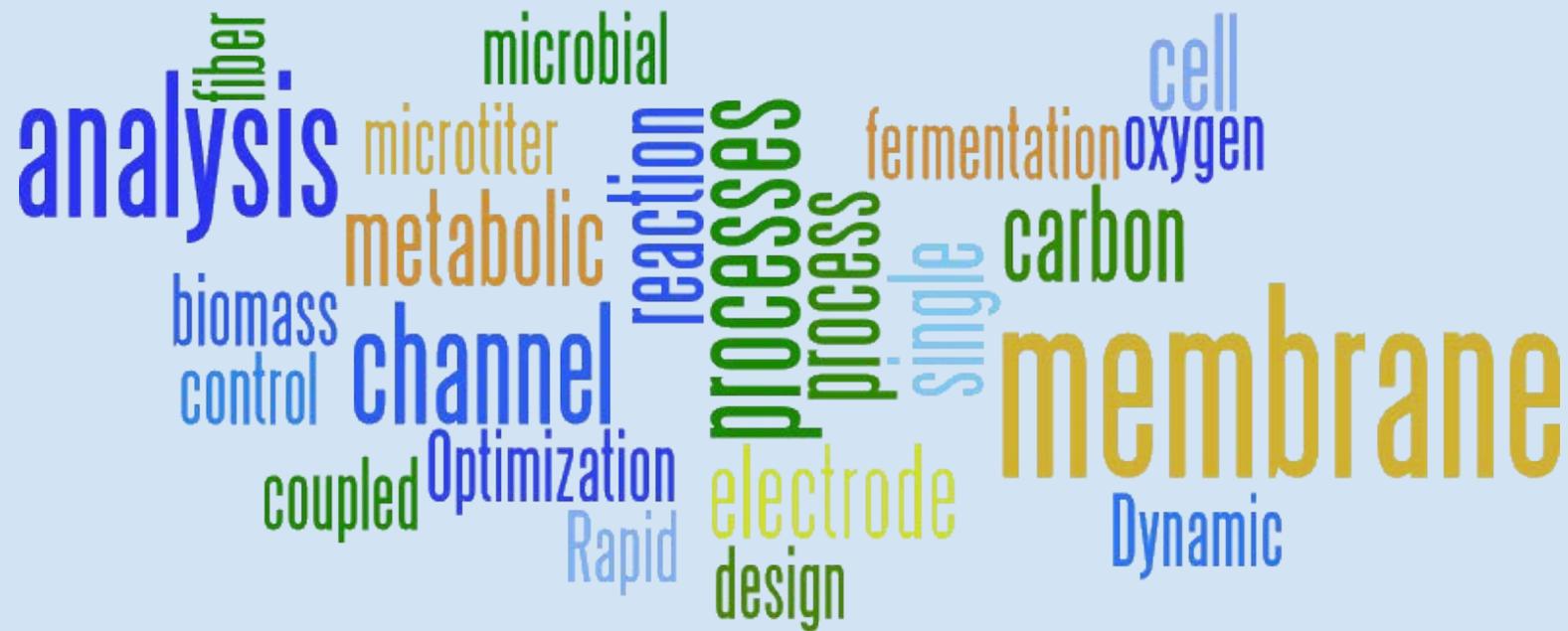
65 participants

11th Conference on Water Technology in Aachen – Oct 27-28

400 participants



Publications



In 2015, a remarkable number of research papers from AVT has been published in renowned peer reviewed scientific journals. You can depict an overview from our new homepage:

