



THE EUROPEAN SOCIETY
OF RHEOLOGY
Everything for the Rheologist



AERC 2019

13th Annual European Rheology Conference

Portorož, *Sloven*ia

April 8-11, 2019

REPORT



SUMMARY

European Society of Rheology was founded in 1996 with 12 founding national member societies. In 1998 in Slovenian Portorož, the first European Rheology Conference was organized after the ESR was formally established in 1996 and after the 1st Committee Meeting of ESR took place in 1997.

With this conference we are returning to the place where the European Rheology conferences started 21 years ago, to Mediterranean coastal town of Portorož.

AERC 2019 welcomed 391 participants including 111 students from 37 different countries. 349 contributions were organized into 12 symposia. Invited talks included two plenary lectures of Professor Paula Moldenaers and Professor Peter Fisher, and the Weissenberg Awardee lecture of Professor Jan Vermant. Within symposia there are also 9 keynote lectures and, last but not least, a poster session. In comparison to the previous conferences, there were two new Symposia addressing solids, Mechanics of Time-Dependent Materials and Granular Materials & Highly filled systems.

In order to pay a special honor to Professor Mike Webster, who has unexpectedly passed away last year, a special memorial session has been organized and coordinated by his colleagues. It was opened by Timothy Philips and Russel Davies with the warm talk "Personal and scientific contributions of Mike Webster".

The Amherst rheology course "Synergy of Experiment with Theory in Rheology" coordinated by Henning Winter, Manfred H. Wagner and Ole Hassager pleasantly surprised organizers by large number of attendees.

Striving to emphasize societal value of rheology within the conferences the participants were invited to demonstrate the impact of their research not only on science but on well-being of humankind in general.

Rich social program provided friendly platform for networking and included welcome reception, well accepted Slovenian culinary evening with Slovenian wine and food tasting and Gala dinner with entertainment program.

European society of rheology as well as International Society of Rheology provided support for organization of event to Slovenia Society of Rheology and Slovenian Society for Experimental Mechanics. Journal of Non-Newtonian Fluid Dynamics, Soft Matter and Mechanics of Time-dependent Materials journal supported the event by advertising.

The conference was supported by eleven international and fifteen Slovenian sponsors. Young researcher prizes were sponsored by ThermoFischer Scientific and Soft Matter.

OBJECTIVES

The AERC 2019 main focuses were:

- Providing forum for discussion of the latest research results and developments in various fields of rheology
- Establishment of the friendly environment for ideas exchange and discussion
- Synergy of the experimental and theoretical knowledge from academic and industrial sectors
- Highlighting the societal value of research in various fields of rheology

The conference aimed to emphasize the societal value of rheology to show its importance for everyday life and industrial applications.

LOCATION AND VENUE

The AERC 2019 has been held at the Grand Hotel Bernardin & Congress Center Bernardin in Portorož, Slovenia. The venue provides the largest in Slovenia congress center that was capable of accommodation of required number of participants (735 rooms) as well as organization of 6 parallel sessions. Venue is well accessible from airports of Trieste, Venice and Ljubljana. The shuttle transfer service GoOpti has been offered for participant on the discounted price.

The hotel complex offers 3 hotels, all in walking distance from the venue: Grand Hotel Bernardin ***** (the main conference venue), Hotel Histrion **** and Hotel Vile Park *** (ca 300 meters).

COMMUNICATION

Main communication with future participants has been held via conference webpage, provided by European Society of Rheology (ESR) and supported by Adrian Kuehnis.

Abstract submission has been accomplished again with the support of ESR through the system of prof. Albert Co, who also assisted with the generation of Book of abstracts and management of online application during the event itself.

The information about the conference has been well advertised by utilization of various channels:

- Flyers were distributed digitally through the mailing list provided by ESR as well as physically at AERC2018 in Sorrento, Italy

- The promotional article has been published in Applied Rheology
- Regular updates were made to the conference webpage
- Changes and updates were also distributed via mailing
- Banners of the conference were posted by Journal of Non-Newtonian Fluids and Soft Matter
- Journal of Non-Newtonian Fluids and Mechanics of Time-Dependent materials supported the conference with the option of special issues. Unfortunately, supported by symposia organizers, this initiative did not find interest of participants and was not realized.
- Book of abstracts was provided in electronic form and in printed form only by preliminary request. Conference organizers believe that this is the first step to reduce the usage of paper data carriers in large scales
- Conference program was available online and in printed form in every conference bag
- Online web application (Albert Co) provided the position of the talk of interest and allowed participant to form their own program of event attendance

CONFERENCE FEES

Conference fee included: attendance at all sessions, lunches, coffee, welcome reception and Gala dinner. Accompanying person fee included: welcome reception, three lunches and Gala dinner. Payment were accepted via bank transfers and online payment system.

	Early bird before 28.2.2019	Full registration after 28.2.2019
Regular	530 €	600 €
Student (Student ID required)	300 €	400 €
Accompanying person	120 €	180 €
Rheology course	180 €	220 €

ORGANIZATION

MEMBERS OF THE HONORARY SCIENTIFIC COMMITTEE:

- Crispullo Gallegos
- Rene Gaudu
- Han Meijer
- Giuseppe Marrucci
- Evan Mitsoulis
- Paula Moldenaers
- Jean Michel Piau
- Ivanov Yatchko
- Manfred Wagner
- Ken Walters

CHAIR COMMITTEE

- Igor Emri
- Alexandra Aulova
- Slobodan Žumer
- Manica Ulcnik Krump
- Edvard Govekar

ORGANIZING COMMITTEE

- Igor Emri - Chair
- Alexandra Aulova - Principal organizer
- Peter Emri - Social program, supplies and sponsors
- Tjaša Möderndorfer - Social program
- Jure Jakoš - Technical support
- Matej Jagodič - Technical support
- Adrian Kuehnis (ESR) - Website support, online payment system
- Albert Co (ISR, ESR) - Abstract submission, support with book of abstracts and webapp
- Student group - On-site communication and registration

TECHNICAL PROGRAM

SCHEDULE

Throughout three days of conference 12 symposia held oral presentations in 6 parallel sessions, 3 plenary lectures were presented in the beginning of every day and social events were planned every evening with exception of the last day.

	7.04 DAY -2	8.04. DAY -1	9.04 DAY 1	10.04 DAY 2	11.04 DAY 3		
M O R N I N G	Rheology Course	Rheology Course	Opening	Plenary	Plenary		
			Plenary	Sessions	Sessions		
			Sessions				
			Coffee Break			Coffee Break	Coffee Break
			Sessions			Sessions	Sessions
A F T E R N O O N	Lunch	Lunch	Lunch	Lunch	Lunch		
Rheology Course	Rheology Course	Sessions	Sessions	Sessions			
		Coffee Break	Coffee Break	Coffee Break			
		Sessions	Sessions	Sessions			
		Poster Session Culinary Evening		Closing Ceremony			
E V E N I N G		WELCOME RECEPTION	REGISTRATION	Gala Dinner with Entertainment Program			

PLENARY

Paula Moldenaers, KU Leuven (Belgium) - "Towards miniaturization: how does confinement affect the break-up and coalescence of droplets in shear flow"

Peter Fischer, ETH Zurich (Switzerland) - "Digested? - The design and in-vivo validation of satiety controlling food"

Jan Vermant, ETH Zurich (Switzerland), *Weissenberg Award winner* - "Can (interfacial) rheology save the world?"

SYMPOSIA

The symposia of AERC2019 included traditional titles as well 2 new symposia: Granular materials, highly filled systems and Mechanics of Time-Dependent materials. Colleagues of prof. Mike Webster supported organization of Non Newtonian Fluid Mechanics & Flow Instabilities Symposium in his honour. The list of Chairmen/Symposia organizers includes multiple female and young scientists as well as well-known names. Organizers

paid attention as to the regional distribution of the symposia organizers in order to cover as many European countries as possible.

Symposia	Chairmen
Blends, Emulsions, Foams & Interfacial Rheology	Anniina Salonen (France) Jan Vermant (Switzerland) Jose Munoz (Spain)
Colloids & Suspensions	Michel Cloitre (France) Guillaume Ovarlez (France) Norbert Willenbacher (Germany)
Experimental Methods & Progress in Rheometry	Dimitris Vlassopoulos (Greece) Roland Kádár (Sweden) Christian Clasen (Belgium)
Food, Pharmaceutics & Cosmetic	Patricia López Sánchez (Sweden) Antonio Guerrero (Spain) Mihaela Turcanu (Germany)
<i>Granular materials, highly filled systems</i>	Joamin Gonzalez-Gutierrez (Austria) Berenika Hausnerova (Czech Republic) Tamás Börzsönyi (Hungary)
Industrial Rheology & Processing	Ulrich Handge (Germany) Clemens Holzer (Austria) Lazslo Gomze (Hungary)
Living & Active Matter	Nadia Antonova (Bulgaria) Anke Lindner (France) Salima Rafai (France)
<i>Mechanics of time-dependent materials</i>	Alberto D'Amore (Italy) Hongbin Lu (USA) Mehrddad Negahban (USA)
Micro, Nano Fluidics & Microrheology	Pouyan Boukany (Netherlands) Manlio Tassieri (UK) Francisco J. Galindo-Rosales (Portugal)
Non Newtonian Fluid Mechanics & Flow Instabilities (includes session in honour of prof. Mike Webster)	Tim Phillips (UK) Russel Davies (UK) Natalie Germann (Germany) Corneliu Balan (Romania)
Polyelectrolytes, Self Assembling Fluids & Gels	Olga Philipova (Russia) Alexander Malkin (Russia) Christophe Chassenieux (France)
Polymer Solutions, Melts & Composites	Giovanni Ianniruberto (Italy) Evelyne van Ruymbeke (Belgium)

POSTER SESSION

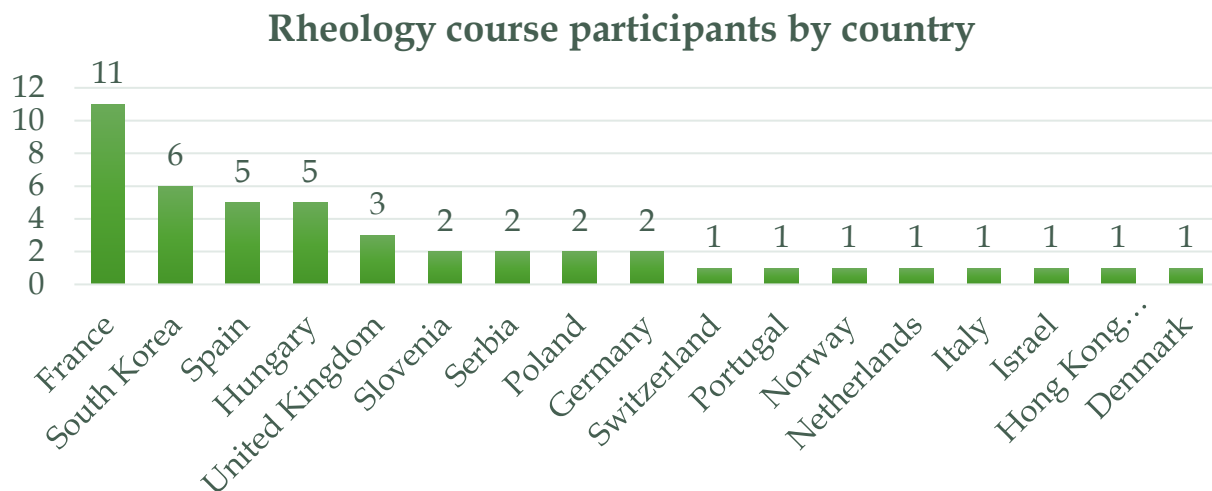
Poster session has been coordinated by Alexandra Aulova and accepted 92 posters. Due to limited number of oral presentations some of contributions were moved to poster session.

RHEOLOGY COURSE

The Amherst Rheology Course "Synergy of Experiment with Theory in Rheology" has been held on the 7th and 8th of April (Sunday and Monday) prior to the AERC 2019 at the conference venue Grand Hotel Bernardin, Portorož, Slovenia. Lectures performed by professors H. Henning Winter (University of Massachusetts, Amherst, MA/USA), Manfred H. Wagner (Technical University Berlin, Berlin / Germany) and Ole Hassager (Technical University of Denmark, Kongens Lyngby).

Combining theoretical background and possibilities of IRIS software platform allows exploration of the newest developments in rheology. The course covers handling of data from rheological experiments, plotting, overlay, extraction of material parameters, modelling with theory, data storage and retrieval and more. Participant have possibility to learn about rheology basic and linear viscoelasticity as well as to investigate non-linear domain.

From 49 registered participants, 47 were present at the Rheology course. Interest was extremely high and since the course could not accommodate more than 50 people, some requests were denied. Limitation has been related to available hardware required for the course and not other capacities. Participants from 17 countries were present at the Rheology course.



AWARDS

During the conference the ceremony of Weissenberg Award presentation has been held. Young research awards were delivered to the winners of best oral and poster presentations in different categories.

WEISSENBERG AWARD

The Weissenberg award presentation has been coordinated by prof. Manfred Wagner. After laudation by prof. Gerry Fuller president of ESR, prof. Peter Fischer has handed the award to the 2019 year winner prof. Jan Vermant (see photo).



YOUNG RESEARCHER AWARDS

In 2019 the awards were spread among 95 scientists who are younger than 35 years only (they applied for competition). Every contribution, poster or oral talk has been evaluated by 3 members of jury consisting of ESR representatives and presidents of National societies as well as Individual members (all together 21 members). Evaluation has been done based on the abstract and poster or oral presentation and according to three criteria ranked from 1 to 10: Scientific Soundness, Presentation quality/design of poster, Social impact.

Based on the analysis the following awards winners were chosen:

- Best oral presentation (sponsored by ThermoFischer Scientific, 200 eur)
 - Lift of viscoplastic fluids - **Maziyar Jalaal** (Applied Mathematics and Theoretical Physics, University of Cambridge, Cambridge, United Kingdom)
- Best oral presentation with the scientific impact (sponsored by ThermoFischer Scientific, 200 eur)
 - Liquid migration in shear thickening suspensions flowing through constrictions - **Rory E. O'Neill** (School of Physics and Astronomy, University of Edinburgh, Edinburgh, United Kingdom)
- Best poster presentation (sponsored by ThermoFischer Scientific, 200 eur)

- Comparing recycled and virgin poly (ethylene terephthalate) melt-spun fibers - **Yijing Qin** (Institute of Polymer Materials, Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany)
- Best poster with the scientific impact (sponsored by ThermoFischer Scientific, 200 eur)
 - Structural, micro- and macrorheological properties of alginate solutions as bioink for 3D bioprinting - **Bruna R. Maciel** (Institute for Mechanical Process Engineering and Mechanics, Karlsruhe Institute of Technology, Karlsruhe, Germany)
- Best poster (sponsored by Soft Matter, 50 eur each)
 - Agarose/k-carrageenan-based hydrogel films enriched with natural extracts for wound healing applications - **Lorena Anna Ditta** (Istituto di BioFisica, Consiglio Nazionale delle Ricerche, Palermo, Italy)
 - Reducing viscosity of heavy oil by surfactants and polymer additives - **Kirill Zuev** (Laboratory of Polymer Rheology, A.V.Topchiev Institute of Petrochemical Synthesis, TIPS RAS, Moscow, Russia)
 - Functional hydrogels of a flexible hydrophilic polymer mixed with wormlike surfactant micelles - **Andrey Shibaev** (Physics Department, Moscow State University, Moscow, Russia)

SOCIAL PROGRAM

Social program of AERC 2019 has been strongly linked to the Slovenian coast and traditions.

- We have opened the event with the **Welcome reception** at the terrace of Grand Hotel Bernardin on Monday, the 8th of April. It included drinks and cold and warm buffet and allowed participants to say hello.
- **Slovenian Culinary Evening** on Tuesday, 9th of April has been organized in parallel with the Poster session in the same space. During the poster session participants were able to taste some Slovenian food, oils, and wines. More than 20 different special wines from the Slovenian coast region were available for tasting and purchase.
- **Gala dinner** sponsored by TA instruments started with the aperitifs and slowly moved to the Emerald ballroom of Grand Hotel Bernardin. Live music and dance performance from young Slovenian artists accompanied the meal. The presentation of the International Congress of Rheology 2020 in Brazil has been held at Gala dinner as well.

ACCOMPANYING PERSONS PROGRAM

With the support of the local touristic agency Go Portorož we have formed the attractive list of daily excursions starting from the Monday, 8th of April till Saturday 13th. The offer included trips to Piran, Izola, Ljubljana, lake Bled, Postojna cave and others. **16 accompanying persons** enjoyed the stay in Slovenia.

PARTICIPATION

AERC 2019 welcomed **391 participants** including **111 students** from **37 different countries**. In total **349 contributions** were received.

ABSTRACT SUBMISSION AND SELECTION

The final deadline for abstract submission has been move to the 1.1.2019 (from original 14.11.2018), which have caused certain logistical problems: i) the acceptance date of 2.2.2019 was too close to the event data for arrangement of travelling from some distant countries (USA for example) and therefore some abstracts have been withdrawn and ii) one month for the coordination and abstract evaluation was not enough and symposia organizers were struggling with properly distribution contributions.

As a result of hard and devoted work of symposia organizers, **28** abstracts submitted for oral communications had to be moved to posters (some were lately withdrawn) due to lack of free program slots for every symposium. In order to accept as many oral presentations as possible organizers of two symposia dismissed keynote lecture in a favor of two ordinary talks.

STATISTICS PER SYMPOSIUM

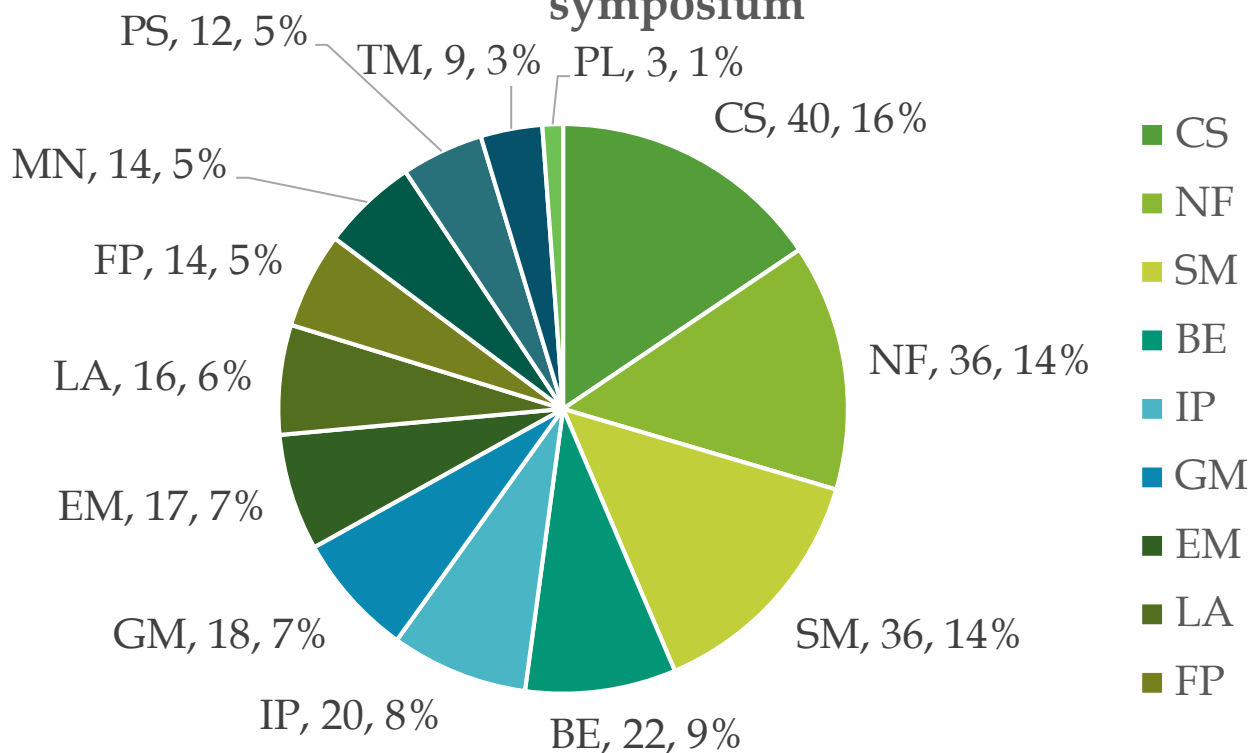
Below you can see in table and graphical form the distribution of oral presentations per symposia.

Three biggest symposia (Non Newtonian Fluid Mechanics & Flow Instabilities, Polymer Solutions, Melts & Composites and Colloids & Suspensions) ran throughout the whole conference, while the smaller ones were fitted in the schedule and sometimes split in two parts if necessary.

Each small section of 3-5 oral communications had a coordinator, which was invited especially for every particular section.

Plenary Lectures	PL	3
Mechanics of Time-Dependent Materials	TM	9
Polyelectrolytes, Self-Assembling Fluids & Gels	PS	12
Food, Pharmaceuticals & Cosmetics	FP	14
Micro, Nano Fluidics & Microrheology	MN	14
Living & Active Matter	LA	16
Experimental Methods & Progress in Rheometry	EM	17
Granular Materials & Highly Filled Systems	GM	18
Industrial Rheology & Processing	IP	20
Blends, Emulsions, Foams & Interfacial Rheology	BE	22
Non Newtonian Fluid Mechanics & Flow Instabilities (in honour of Prof. Mike Webster)	NF	36
Polymer Solutions, Melts & Composites	SM	36
Colloids & Suspensions	CS	40
Poster Session	PO	92
TOTAL	All	349

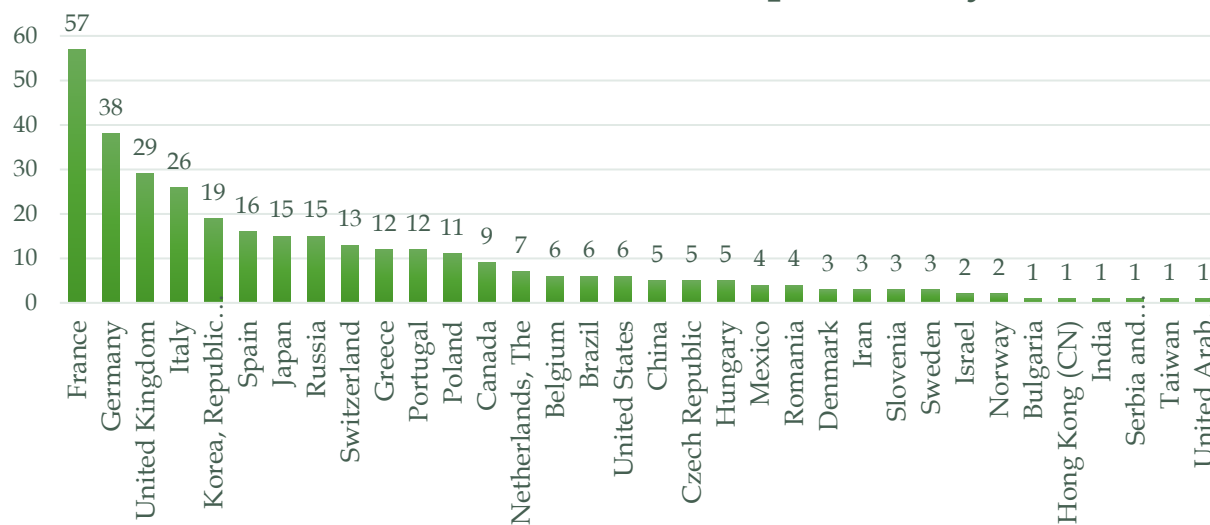
Distribution of oral contributions per symposium



STATISTICS PER COUNTRY

We have received contributions from 37 different countries. Below you can see the distribution of contribution number per country.

Contribution distribution per country



SPONSORS

The conference was supported by eleven international and fifteen Slovenian sponsors.

Below the main sponsors and Exhibitors are presented.

PLATINUM (GALA DINNER)



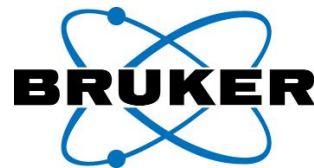
GOLDEN



SILVER



EXHIBITORS AND SPONSORS



Malvern representatives

PRIZES



SUPPORT



PARTNERS



Touristic agency



FINANCIAL STATEMENT

Expenses	€	Income	€
Conference Center	35'750	Conference fees*	178'900
Administration and secretariat During the year	15'350	Short courses	3'250
Hired personal during conference / Students	6'513	Exhibitors/Sponsors	26'350
Rooms invited speakers (with rheology course)	7'191		
Conference dinner	21'800		
Welcome reception	8'800		
Dinner wine and drinks	6000		
Band-live music	2'000		
Dancers/Show	2'244		
Catering (lunches, coffee breaks)	43'200		
Poster Session / Wine tasting	6'270		
Poster billboards-rent	3'122		
Google domain for email	144		
Flyers	835		
Book of abstracts	15'412		
Book for rheology course	3'165		

Final program	600		
ESR fees	13'180		
Banking costs	6'720		
Prizes	950		
Accounting	2'250		
Van Rent + Gas	1'600		
SSEM fee	5'404		
<u>TOTAL</u>	208'500	<u>TOTAL</u>	208'500

*note that conference fees include early bird and late payments from students and regular participants as well as accompanying persons

The following things were covered rom the AERC2019 budget:

- Albert Co - travel expenses, accommodations, conference fee
- Rheology course speakers - accommodation and conference fee
- Plenary speakers - accommodation and conference fee