

CARENA

Newsletter – Issue 2 – May 2012

Editorial

From the Coordinator ...

CARENA-IMETI proudly present...



Arend DE GROOT
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Coordinator

“End of March I spent two very interesting days at the site of CNRS Montpellier. With me more than 100 people visited the highly successful “Inorganic Membrane Technology” workshop organized by the CARENA and IMETI projects (see page 2). The 2-day workshop brought together top-experts in all fields of inorganic membranes and offered a state-of-the-art overview of the different fields.

One of the barriers for the introduction of membrane reactors in industry the CARENA project addresses, is the acceptance of inorganic membranes in industry. The research in CARENA therefore focuses on critical aspects such as lifetime and manufacturability. To achieve the projects ambitions, however, intensive discussions between academia and industry on the topic of inorganic membranes are equally important. For this reason, as a coordinator I was very proud to hear the many complements of industrial and academic participants on the program and organization. And to witness the active discussions.

Already preparations for further dissemination activities from the CARENA project are underway and we are actively working to cooperate with other European Projects. With such a promising start of CARENA’s dissemination activities I would advise everyone with an interest in membranes and membrane reactors to look out for the follow-up!”

Arend de Groot

What is CARENA ?

The 1st of June 2011 marked the start of the **CARENA** project: **Catalytic Reactors based on New Materials for C1-C4 valorization**. It is an EU-funded collaborative project to create technologies enabling efficient conversion of light alkanes and CO₂ into higher value chemicals. To reduce the dependency of the European community on imported oil, the CARENA project will promote the implementation of catalytic membrane reactors in the European chemical industry.

**Collaborative Project: Large-scale integrating project
FP7-NMP-2010-LARGE-4**

48 months - Start day : 1st June 2011

www.carenafp7.eu

CARENA gather 19 partners with high level of expertise in their fields all over Europe



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CARENA in progress



**1- Workshop on INORGANIC MEMBRANE TECHNOLOGY -
Advanced Production & Design -
27-28 March 2012. IEM-CNRS, Montpellier – France.**

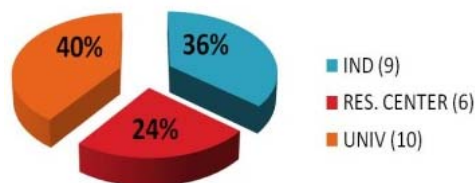


The IMeTI & CARENA projects organized a joint workshop on **Inorganic Membrane Technology - Advanced Production & Design** - in **Montpellier, France** on **27-28 March 2012**. It was kindly hosted by the CNRS Montpellier and organized by the Institut Européen des Membranes de Montpellier (CNRS-IEM) with the collaboration of both the EMH and Sintef.

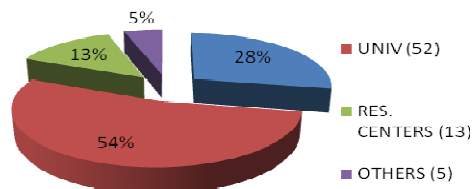
Over 100 participants were present. Numerous industry sectors as well as research institutes and academia which together gave valuable contributions. It was a successful workshop with fruitful discussions.

Presentations, photos and more information are available on the CARENA website.

Speakers



Participants





2 - Review of the Current State

Now we are approaching the CARENA annual meeting it is a good moment to reflect on the first year of the project.

It is very encouraging to see how the CARENA partners not only took up their tasks with great enthusiasm and dedication, but also how well they interact and collaborate with other partners. In some cases replacement of contact persons resulted in temporary hiccups in the partner contacts, but this could be solved quickly and generally did not lead to major deviations in the work.

The collaboration clearly benefits from the website, which is frequently visited and used as a common platform to exchange information and to vote online. Also the working procedures as set out by the Project Steering Committee (PSC) turn out to be very fruitful in improving the interaction between the transversal work packages. Especially the quarterly progress reports, which summarize progress, status of the Key Performance Indicators (KPIs), (potential) deviations, and work plan, turn out to be valuable in making timely adjustments and taking actions. The progress reports also serve as input to the Scientific Board, who reviews the scientific progress.

The progress achieved in the work packages is generally more than satisfactory. WP1 finished the steam reforming process designs with open- and closed-membrane reactor architecture as well as the reference case. In WP2 the experimental work has started after definition of stream conditions for each unit in a modified process loop and catalyst synthesis and testing started in WP3. In the transversal work packages (WP4-6) several new membranes, materials, tools, equipment, devices and models have been developed that will be applied in support of the work in WP1-3.

CARENA is well on track! This is probably best illustrated by the number and quality of papers and (poster) presentations, which in this early stage of the project already exceeds expectations. A highlight was certainly the IMeTI-CARENA workshop in Montpellier on 27-28 March. The workshop, which brought together 100 membrane experts from industry, academia and knowledge institutions from 11 countries, included a significant contribution from CARENA members.

Hank Vleeming



3- Interview of CARENA partner: Johnson Matthey, United Kingdom



Johnson Matthey



Andy Smith is a Principal Scientist at Johnson Matthey. He has been working in the company since 1997. Andy obtained his PhD thesis in complex mixed metal oxide chemistry and computational molecular modelling at the University of Reading in 1995. He continued to work at the University of Reading as a post-doc researcher in the field of solid state chemistry before joining Johnson Matthey in 1997. Since joining Johnson Matthey he has worked in research and contributed to patents and academic publications in the field of heterogeneous catalysis. He is a Chartered Chemist and also a STEMNET Ambassador of Science.

The CARENA project has been designed with a strong emphasis on multi or crossdisciplinarity. What progress can be expected if chemists work in closer relation with other disciplines?

The continued development of new products and access to new markets requires us to collaborate with both leading participants in these markets and with academic researchers who have an understanding of the latest developments. To support this, Johnson Matthey participates in a diverse range of R&D programmes. One of the attractions of a project such as CARENA is the large number of partners, each bringing their own skills and core competences to the project. When you analyze any of the work packages in CARENA it is clear that many different skill sets have been brought together to help achieve the objectives.

The CARENA project brings together Research labs, SMEs and industry. How do you view research-industry collaboration?

In fact Johnson Matthey has a long history of participation in a diverse range of R&D programmes including UK, US and EU supported projects.

There are many advantages in collaborating with other experts be they from companies or academic institutions. From past experience with multi-disciplinary projects I am sure that participation in CARENA, will lead to rewarding long term associations with specialist organisations from around the EU.

What is the added-value of an EU project such as CARENA compared with other partnerships on the same topic you may be involved in?

Over the past 10 years there has been an enormous increase in R&D activities to address the predicted future demands for energy. Innovation in chemical processes, the use of alternative feedstocks and new process technologies are a vital part in achieving this. The added value of the CARENA project is that it brings together a strong consortium of European partners, each with their own key skills and competences. Hopefully, this approach will lead to major improvements and a better understanding of catalytic membranes and their application in conversion of light alkanes to higher value chemicals.

Thank you Andy, and all the best for CARENA

Read the full interview online

<https://www.carenafp7.eu/index.php/Interviews/Interviews.html>

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4- Overview : PhD and Post doc about their work subject : Antonio RICCA – University of Salerno, Italy.

Antonio Ricca, PhD Student at the University of Salerno since 2011, ITALY. In 2009, he graduated in Chemical Engineering at the University of Salerno, and in the 2010 he was researcher fellow in DICA of UNISA.

The topic of his PhD is "CAlytic membrane REactor based on New mARterials for C1-C4 valorization". His supervisors are Prof. Ciambelli and Prof. Palma.



How did you meet the Prof. Ciambelli's team?

Ciambelli is the coordinator of Catalysis and Chemical Industrial research groups, two of the most relevant resources at the University of Salerno. During my academic career I had the possibility to meet Prof. Ciambelli and Prof. Palma and I found their research activity very interesting.

Can you say a few words about the context of cooperation with other labs?

The high complexity of structured catalysts requires extensive know-how; therefore to interact with laboratories of excellence in the field of catalysis is of critical importance. These cooperation will lead to a better understanding of the features of the heterogeneous catalytic reactions carried out by using structured catalysts such as metal foams.

Did you participate to national/international events during your PhD? If yes, What did you learn?

I've participated to several national and international conferences during my PhD:

- May 9-11, 2011 – Florence (ITALY) – PRES'11 (poster)
- September 11-16, 2011 – Lecce (ITALY) – SCI 2011 (National conference) (poster)
- December 14-16, 2011 – Rome (ITALY) – European Fuel Cells 2011 (oral presentation)
- April 11-12, 2012 – Berlin (GERMANY) – FUCE 2012 (poster)

The exchange of ideas with other experts in this field is an important tool for expanding my perspectives. Moreover, to disseminate the results obtained in my activity is certainly a reason of pride for a researcher.

What do you expect from this PhD?

The CARENA project is one of the most ambitious initiatives in the European and World research panorama for me, and to be a part of it is a reason of pride as well as a source of stimulation. The project covers the various features of industrial catalysis (catalysts, supports, membranes, reactors), therefore this PhD period gives to me the opportunity to develop my skills in the field of industrial catalysis and to compare myself with different realities, teaching me to use my knowledge in the field of international industrial panorama. Collaborating with other excellence institutions of European research will give me the opportunity to meet the best researchers of catalysis world, allowing me to explore new research pathways and to extend my activity targets.

I feel lucky to work within University of Salerno, alongside Prof. Vincenzo Palma and Prof. Paolo Ciambelli who, thanks to their long time experience in the field of industrial catalysis, will guide me in my activities and from whom I can learn further knowledge.

**Thank you Antonio for giving us a glimpse
into your research activities!**

Read the full interview online

<https://www.carenafp7.eu/index.php/Interviews/Interviews.html>

CARENA

UNIVERSITY OF TWENTE. **5- 12th International Conference on Inorganic Membranes**
9-13 July 2012. Enschede, The Netherlands.



Organized every other year, the International Conference on Inorganic Membranes (ICIM) is the premier venue for reporting and discussing the latest developments in the field of inorganic membranes. Four days are filled with presentations that will cover topics ranging from the sub-nanoscale of material science to the bulk-scale of industrial membrane applications. As more inorganic membranes enter the market, the scope of the conference is expanding to keep pace with the newest developments.

The 2012 edition (ICIM-12) of the conference is organized jointly by the University of Twente and the Energy research Centre of the Netherlands (ECN). It will be held at the campus of the University of Twente, located in the city of Enschede, The Netherlands, on 10 – 13 July 2012.

Why you shouldn't miss this conference

ICIM is the only world conference fully dedicated to inorganic membranes, covering metal, carbon, glass, ceramic, and hybrid/composite membranes.

The field of inorganic membranes is booming, on the verge of realizing its potential in major technological applications in different areas.

The conference covers the full range of inorganic membrane applications, from liquid filtration to gas separation.

Conference sessions range from fundamental materials research to applications and modelling.

A specific session devoted to membrane reactors

For more information : www.icimconference.com

6 – Next Consortium meeting

The next annual meeting will be held in **Lyon - France** on **29-30 May 2012**. It will be hosted by IRCElyon & Arkema.

Miscellaneous

Upcoming Events

► Industrial Technologies 2012 **19-21 June 2012**. Aarhus, Denmark <http://industrialtechnologies2012.eu/>

► Euromembrane 2012 **23-27 September 2012**. London, United Kingdom.

<http://www.euromembrane2012.com/index.html>

► XIth European Congress on Catalysis "**20 years of European Catalysis... and beyond**" - **1-6 September 2013**. Lyon, France.

<http://www.europacatlyon2013.fr/en/home.html>

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