

# Fats and Oils as Renewable Feedstock for the Chemical Industry

Ursula Biermann and Jürgen O. Metzger

Since 2008, the *European Journal of Lipid Science and Technology* (EJLST) has published a special issue on “Fats and oils as renewable feedstock for the chemical industry,” first yearly and since 2016 biannually. These issues were edited by Michael (Mike) Meier and Jürgen O. Metzger and based on the respective international workshops organized initially in Emden and then in Karlsruhe/Germany. Mike Meier had to withdraw as editor of this series and thus also this present special issue, due to conflicting new editorial appointments. Ursula Biermann, a member of the scientific committee of the workshop since 2013, followed him as co-editor.

In the nine previous special issues, 102 manuscripts were published, giving an excellent insight into the hot as well as classical topics of oleochemistry. Apart from more classical applications of oleochemicals, for example, detergents, personal care, and lubricants, the increasing use of fatty acid derivatives and of glycerol for the synthesis of renewable monomers and polymers is the most remarkable and a permanent topic over the years. Additionally, an increasing interest in the application of established as well as new catalytic reactions on oleochemicals can be observed. Metathesis, especially cross-metathesis of oleochemicals, was reported in many papers over the years, as well as hydroformylation and hydroaminomethylation. The isomerizing methoxycarbonylation of unsaturated fatty esters is most fascinating and was first presented on the 2nd Workshop in 2009 by Cole-Hamilton,<sup>[1]</sup> followed by studies of many research groups since then. The application of the effective and simple thiol-ene addition reaction to the double bonds of fatty compound for their functionalization and polymerization has equally attracted much attention. The oxidative cleavage of unsaturated fatty acids, though a classical topic, has obtained renewed interest. Efficient catalytic ways for this important reaction are necessary to substitute the non-sustainable ozone cleavage. Glycerol has become available in large amounts because of the increasing biodiesel production and novel transformations and uses have been studied and reported over the years. Biotechnological conversions of fatty compounds to value-added compounds were reported in many papers. New fatty compounds, that is, cardanol from cashew nut shell liquid with aromatic structure, have received much interest.

This is the 10th special issue covering 12 selected contributions<sup>[2,3]</sup> to the 10th Workshop on Fats and Oils as Renewable Feedstock for the Chemical Industry, which took place from March 17 to 19, 2019, in Karlsruhe, Germany, organized by *abiosus* e.V. in cooperation with the Agency of Renewable Resources (FNR), Germany. Thirty lectures and forty



**Ursula Biermann** studied food chemistry in Hannover and Munich. She received her doctorate at the Technische Universität München in 1979 under W. Grosch, Deutsche Forschungsanstalt für Lebensmittelchemie, Garching. Since 1987, she has been a research fellow at the Institute of Chemistry of the Universität Oldenburg under J. O. Metzger, where she worked on the synthesis of

novel fatty compounds using natural oils and fats as chemical raw materials. The main focus of her studies lies in Lewis-acid-induced, radical, and thermal addition reactions to the C,C-double bond of unsaturated fatty compounds.



**Jürgen O. Metzger** studied chemistry at the universities of Tübingen, Erlangen, Berlin, and Hamburg, Germany. He received his Ph.D. under the supervision of H. Sinn in 1970 at the University of Hamburg, and completed his habilitation in 1983. In 1991, he was appointed professor of organic chemistry at the University of Oldenburg, Germany, and he retired in 2006. He is chairman

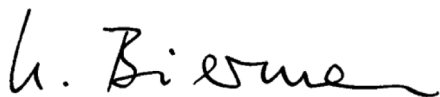
of *abiosus* e.V., a non-profit association for the advancement of research on renewable raw materials. His research areas include sustainability in chemistry, environmentally benign organic synthesis, renewable raw materials, radical chemistry, and mass spectrometry.

posters provided once more an update on the newest developments in the field of fats and oils as renewable feedstock for the chemical industry, demonstrating the advances made in the field. Oleochemistry remains a very active field of research, providing important contributions for a sustainable development.


Eventually, we would like to invite you to participate in the 11th Workshop on Fats and Oils as Renewable Feedstock for the Chemical Industry from March 7 to 9, 2021. Hopefully, you will have the opportunity to participate. We are looking forward to ex-

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citing and fruitful discussion with you, the fats and oils community. The program and additional information will be available in September 2020 (<http://www.abiosus.org/meetings.html.de>).



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- [1] M. R. L. Furst, R. Le Goff, D. Quinzler, S. Mecking, H. Catherine, C. H. Botting, D. J. Cole-Hamilton, *Green Chem.* **2012**, *14*, 472.
- [2] The contribution from Malte Winnacker, Polyhydroxyalkanoates (PHAs): Recent Advances in their Synthesis and Applications, was erroneously published in *Eur. J. Lipid Sci. Technol.* **2019**, 121.
- [3] The contribution by Sylwia Dworakowska, Cédric Le Coz, Guillaume Chollet, Etienne Grau, Henri Cramail, Cross-Linking of Polyesters Based on Fatty Acids, was erroneously published in *Eur. J. Lipid Sci. Technol.* **2019**, 121.