

SUSAN VAN DYK PhD

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CURRENT POSITION

Consultant, freelance science writer, part-time research associate at the University of British Columbia, Vancouver, Canada, and correspondent for greenairnews.com.

BRIEF SUMMARY OF EXPERTISE AND FOCUS

My specific area of focus for the past eight years has been conversion technologies for production of sustainable aviation biofuels (SAF) and policies to promote the production and consumption of aviation biofuels within broader climate change objectives. Technical areas of specific interest include gasification and pyrolysis technologies and upgrading of syngas and bio-oils to biofuels, including potential refinery synergy and co-processing of bio-intermediates within petroleum refineries (both at hydroprocessing and fluid catalytic cracking stages). I have the main author on multiple reports on the topics of SAF/biojet fuels, drop-in biofuels, and co-processing. These include three reports for the International Energy Agency Bioenergy Task 39, two reports for the International Renewable Energy Agency, reports for SAF/biojet projects funded by Boeing and Transport Canada, as well as a report for Natural Resources Canada. I served as project manager on four SAF/biojet projects with the scope including conversion technologies (biochemical, oleochemical and thermochemical), feedstock availability and supply chains, sustainability (life cycle assessment and certification) and policy (mandates, low carbon fuel standards, financial incentives, etc.).

During this time, I was the Coordinator of the IEA Bioenergy Task 39 (liquid biofuels) from 2013-2018, as well as a postdoctoral fellow and research associate at the University of British Columbia.

All this experience has built on my PhD research on enzymatic hydrolysis of lignocellulosic biomass for the production of cellulosic sugars for subsequent fermentation, and a subsequent postdoctoral fellowship at Rhodes University, South Africa.

Prior to this I studied law and obtained a Master's degree in labour law. I worked as a Legal Advisor and Labour Relations consultant for eight years before changing careers and studying science.

EDUCATION

PhD Biochemistry Rhodes University, South Africa, 2006-2010
B.Sc. Honours in Biotechnology (with distinction) Rhodes University, South Africa 2005
B.Sc. (distinctions in Chemistry & Microbiology) Rhodes University, South Africa 2002-2004
LL.M. (Labour Law) University of Stellenbosch, South Africa 1992-1993
LL.B. University of Stellenbosch 1990-1991
B.A. (Law) University of Stellenbosch 1987-1989

KEY PROJECT MANAGEMENT ROLES

2020 Assistant project Manager – (Funder: Natural Resources Canada) A technical and costing assessment of producing and processing lipids and biocrudes in petroleum refineries.

2018-2019 Assistant project manager on developing a White paper and Roadmap on biofuels for aviation, shipping, rail and long-distance trucking for British Columbia. (Funder BC Government & BC Bioenergy Network)

2016-2019 Co-project manager – (Funders: Boeing and GARDN) The ATM Project (Assessment of likely technology maturation pathways for biojet fuel development).

This was a 3-year project funded by the Green Aviation Research and Development Network (GARDN). I was responsible for writing the grant proposal and was part of the project management team. The project objective aimed to obtain 3 different bio-oils from fast pyrolysis, catalytic pyrolysis and hydrothermal liquefaction for upgrading by two laboratories to determine the products and their characteristics, with a specific focus on the biojet fraction. I was involved in all aspects of project management, responsible for coordination and writing of the final research report.

Assistant Project Manager – (Funder Green Aviation Research and Development Network) CBSCI biojet project 2016-2019

This is a different biojet project funded by GARDN, looking at the production of biojet from vegetable oils at a facility in California and its integration into the hydrant system at Toronto Pearson Airport in Toronto, Canada. I was responsible for editing and drafting the final report with the Project Manager.

2015 Project manager – (Funder: Boeing) The viability of a biojet fuel supply chain in Western Canada.

Our research group obtained a contract from Boeing to develop a research report. I was the project manager for a group of researchers from different departments, assessing lignocellulosic feedstock availability and supply chains in Western Canada; assessment of suitable conversion technologies for production of biojet fuels from lignocellulose; as well as a detailed assessment of policies at an international and national level and recommendations. I was responsible for writing several sections and overall editing and completion of the report.

2014-2015 Research coordinator for UBC – Transport Canada Clean Transport Initiative on developing an Aviation Biofuel Supply Chain in Canada (2014-2015).

I coordinated a group of UBC researchers on assessment of feedstock availability in Canada (oleochemical and lignocellulosic) and conversion technologies for a short and medium-term scenario. I was responsible for writing sections on conversion technology assessment.

PEER-REVIEWED PUBLICATIONS AND CONFERENCES

I am the author or co-author of about 50 peer-reviewed publications and have presented my work at more than 20 international conferences.

Total citations (February 2022) [Google Scholar](#) 2599

h-index - 22

i10-index - 29

KEY REPORTS AND PUBLICATIONS RELEVANT TO SAF/BIOJET FUELS AND DROP-IN BIOFUELS

1. Susan van Dyk, Jianping Su, Jack Saddler (2022) **Recent progress in the production of low carbon-intensive drop-in fuels – Standalone production and coprocessing.** IEA Bioenergy Task 39 (report to be published shortly)
2. Susan van Dyk and Jack Saddler (2021) [Progress in commercialization of biojet /Sustainable Aviation Fuels \(SAF\): Technologies, potential and challenges](#) IEA Bioenergy Task 39
3. Susan van Dyk, Jianping Su, Jack Saddler (2018) [Drop-in biofuels – the key role that co-processing will play in its production](#) IEA Bioenergy Task 39
4. John (Jack) Saddler, Susan van Dyk, Don O'Connor, Mahmood Ebadian, Jianping Su, (2020) **A technical and costing assessment of producing and processing lipids and biocrudes in petroleum refineries.** Prepared for Natural Resources Canada. (unpublished)
5. BC SMART Roadmap – [Developing a decarbonization strategy for British Columbia's Marine, Aviation, Rail and Truck sectors.](#) (2019)
6. Van Dyk et al. (2019) [Assessment of likely maturation pathways for production of biojet fuel from forest residues.](#) Vancouver, University of British Columbia
7. International Renewable Energy Agency (2017) [Biofuels for aviation.](#) Technology Brief
8. International Renewable Energy Agency (2021) [Reaching net zero with renewables. Biojet Fuels](#)
9. Susan van Dyk et al. (2015) **An assessment of the potential viability of producing biojet from woody biomass in Western Canada.** Report prepared for Boeing. (unpublished)
10. Susan van Dyk and Jack Saddler (2016) **Flying green: The need for good policy to help develop the production and use of biojet in Canada.** Prepared for the BioFuelnet Policy Task Force (unpublished)

11. S Karatzos, JS van Dyk, JD McMillan, J Saddler. (2017) [Drop-in biofuel production via conventional \(lipid/fatty acid\) and advanced \(biomass\) routes. Part I.](#) *Biofuels, Bioproducts and Biorefining* 11 (2), 344-362
12. S van Dyk Jianping Su James D. Mcmillan Jack (John) Saddler. (2019) [Potential synergies of drop-in biofuel production with further co-processing at oil refineries.](#) *Biofuels Bioproducts and Biorefining* 13(3)
13. S van Dyk, J Su, M Ebadian, D O'Connor, M Lakeman, JJ Saddler (2019) [Potential yields and emission reductions of biojet fuels produced via hydrotreatment of biocrudes produced through direct thermochemical liquefaction](#) *Biotechnology for Biofuels* 12 (1), 281

Further information is available upon request.