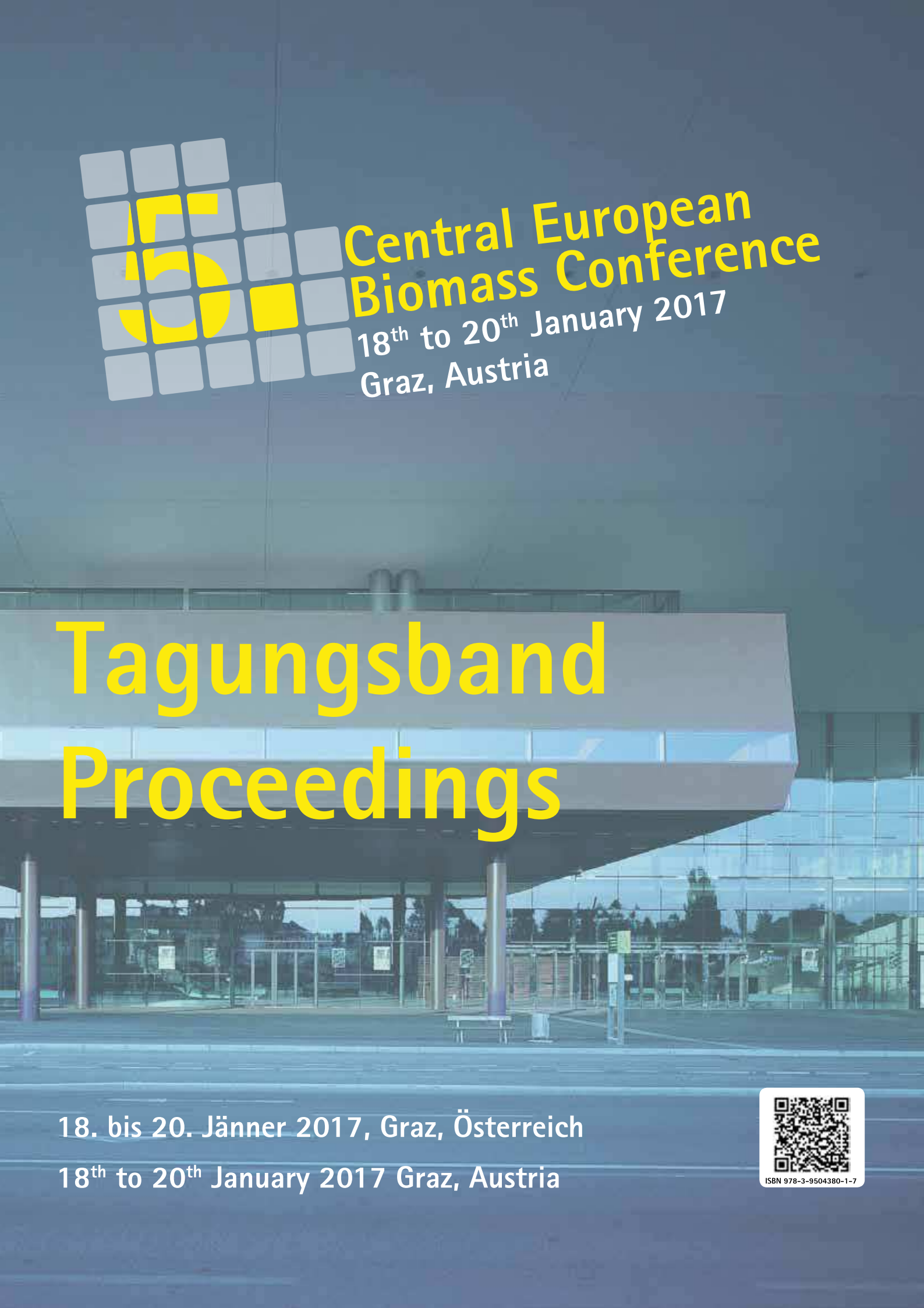

Central European Biomass Conference

18th to 20th January 2017
Graz, Austria

Tagungsband
Proceedings

18. bis 20. Jänner 2017, Graz, Österreich

18th to 20th January 2017 Graz, Austria

ISBN 978-3-9504380-1-7

5. Mitteleuropäische Biomassekonferenz

Eine Veranstaltung von:

In Kooperation mit:

Premiumpartner der Veranstaltung:

Mit freundlicher Unterstützung von:

CEBC digital
Videos, Fotos und Präsentationen finden Sie nach der Konferenz unter www.cebc.at

ISBN 978-3-9504380-1-7

Impressum: Österreichischer Biomasse-Verband, Franz Josefs-Kai 13, A-1010 Wien; Inhalt: Autoren der Beiträge; Redaktion: Jennifer Bauderer, BSc; Gestaltung: Wolfgang Krasny; Druck: hs Druck GmbH, Gewerbestraße Mitte 2, 4921 Hohenzell bei Ried im Innkreis; Erscheinungstermin: 01/2017; Der Inhalt des Tagungsbandes wurde mit größter Sorgfalt erstellt, für die Richtigkeit, Vollständigkeit und Aktualität der Inhalte können wir jedoch keine Gewähr übernehmen.

5th Central European Biomass Conference

Organised by:

In cooperation with:

Premium sponsors:

With support of:

CEBC digital
After the conference, you will find videos, photos and presentations under www.cebc.at/en

ISBN 978-3-9504380-1-7

Imprint: Austrian Biomass Association, Franz Josefs-Kai 13, A-1010 Vienna, Austria; Contents: Authors of the abstracts; Editor: Jennifer Bauderer, BSc, Design: Wolfgang Krasny; Printed by: hs Druck GmbH, Gewerbestraße Mitte 2, 4921 Hohenzell bei Ried im Innkreis, Austria; date of publication: 01/2017; the content of the conference proceedings has been created with great care, however, for the correctness, completeness and topicality of contents we can not take any responsibility.

Innovative technique to monitor the removal of siloxane with sorbent materials: biochar and activated carbons

Davide Papurello
Politecnico di Torino e Fondazione E. Mach
Cso Duca Abruzzi 24, Torino 10129
Via E. Mach 1
38010 San Michele a/A (TN)
+393402351692
davide.papurello@polito.it

Co-Authors: Ilaria Belcari, Luca Tomasi,Silvia Silvestri

Keywords: sorbent material, OFMSW, fuel cell, biogas, VOCs, siloxane

For the future energy prospective, renewable fuels exploitation coupled to highly reliable and efficient local generator systems appear as a promising solution. SOFC energy generator couples the highly efficiency with the renewable fuel exploitation with residential power sizes, well distributed in a local territory. These generators are based on nickel anode structure with solid oxide materials. Nickel suffers the trace compounds poisoning derived especially from the sulphur, silica and chorine compounds. These trace compounds are detectable in renewable fuels such as biogas produced from the anaerobic digestion of organic waste or from waste water sludge. Siloxanes due to their strong and irreversible behavior on SOFC performance, already at ppbv level, requires to be deeply removed. Siloxanes at ppbv level and in the anode environment can produce silica oxides that strongly limit the energy performance blocking the three phase boundary. In this work the sorbent removal performance of commercial activated carbons and wastes of gasification and pyrogasification processes are investigated. PTR-ToF-MS was adopted as innovative and reliable technique to monitor the removal performance of sorbent materials. D4 was adopted as model compound for siloxanes. To best simulate the removal performance in an industrial SOFC energy site, two different GHSV levels were considered in order to investigate the effect of the gas velocity on the sorbent removal performance. Two different materials were selected: a commercial activated carbon and a biochar. Interesting results were achieved to feed a SOFC generator continuously.