

BPPA14

**INTERNATIONAL CONFERENCE ON BIO-FRIENDLY
POLYMERS AND POLYMER ADDITIVES:**

**FROM SCIENTIFIC ASPECTS TO PROCESSING AND
APPLICATIONS**

**19 - 21 MAY, 2014
BUDAPEST, HUNGARY**

PROGRAM AND BOOK OF ABSTRACTS



Hungary-Slovakia
Cross-border Co-operation
Programme 2007-2013

European Union
European Regional Development Fund



BIO-FRIENDLY POLYMERS AND POLYMER ADDITIVES (BPPA14)
CONFERENCE ORGANIZED IN THE FRAMEWORK OF THE
HUSK/1101/1.2.1/0209 PROJECT FUNDED BY THE EUROPEAN UNION
REGIONAL DEVELOPMENT FUND THROUGH HUNGARY-
SLOVAKIA CROSS-BORDER CO-OPERATION PROGRAMME
2007-2013

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ISBN 978-963-08-9492-0

Printed and published by Palatinus Print Kft.

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19 May Monday

8:00 - 9:00	REGISTRATION
9:00 - 9:10	WELCOME, OPENING
9:10 - 9:20	JAROSLAV MOSNÁCEK
9:20 - 9:55	Info lecture on POLYFRIEND
9:55 - 10:30	IL1 LUC AVEROUS
10:30 - 10:45	IL2 ANDRZEJ DWORAK
10:45 - 11:05	Coffee break
11:05 - 11:25	O1 ANDRÁS SZILÁGYI
11:25 - 11:45	O2 MÁTYÁS DABÓCZI
11:45 - 12:05	O3 ÉVA KISS
12:05 - 13:30	O4 IGOR LACÍK
13:30 - 14:05	Lunch break
14:05 - 14:40	IL3 MAREK KOUTNY
14:40 - 15:00	IL4 SÁNDOR KÉKI
15:00 - 15:20	O5 MARIA LORENA FALCO
15:20 - 15:40	O6 ARANTZAZU VALDÉS
15:40 - 15:55	O7 TIBOR ALPÁR
15:55 - 16:30	Coffee break
16:30 - 16:50	IL5 JOZEF RYCHLY
16:50 - 17:10	O8 ZOLTÁN KALETA
17:10 - 17:30	O9 MAEVA BOCQUÉ
17:30 - 17:50	O10 PANNA VASS
	O11 GYÖRGY KASZA

20 May Tuesday

8:30 - 9:05	IL6 ANDREJ KRZAN
9:05 - 9:40	IL7 NICO BRUNS
9:40 - 10:00	O12 BEÁTA SZOLNOKI
10:00 - 10:20	O13 MARTIN DANKO
10:20 - 10:35	Coffee break
10:35 - 11:10	IL8 MIKLÓS ZRÍNYI
11:10 - 11:45	IL9 PAVOL ALEX
11:45 - 12:05	O14 ÉVA KUN
12:05 - 12:25	O15 BARBARA TRZEBICKA
12:25 - 14:00	Lunch break
14:00 - 14:35	IL10 MARINA RAMOS
14:35 - 14:55	O16 NORBERT MISKOLCZI
14:55 - 15:15	O17 ALICJA UTRATA-WESOLEK
15:15 - 15:35	O18 JOZEF KOLLÁR
15:35 - 15:55	O19 ÁKOS SZABÓ
15:55 - 16:10	Coffee break
16:00 - 18:00	POSTER SESSION

19:00 CONFERENCE DINNER

21 May Wednesday

8:30 - 9:05	IL11 BÉLA PUKÁNSZKY
9:05 - 9:25	O20 CSILLA VARGA
9:25 - 9:45	O21 PIETER SAMYN
9:45 - 10:05	O22 ÉVA FENYVESI
10:05 - 10:25	O23 ENIKŐ BORBÁS
10:25 - 10:40	Coffee break
10:40 - 11:15	IL12 GYÖRGY MAROSI
11:15 - 11:50	IL13 IVAN CHODAK
11:50 - 12:10	O24 IMRE HEGEDÜS
12:10 - 12:30	O25 KATARÍNA BORSKÁ
12:30 - 14:00	Lunch break
14:00 - 14:20	O26 LÍVIA NASZÁLYI NAGY
14:20 - 14:40	O27 TAMÁS TÁBI
14:40 - 15:00	O28 GÁBOR BORDÓS
15:00 - 15:20	O29 STEFAN CHMELA
15:20 - 15:30	CLOSING

- 14:00 - 14:20 O26 **Livia Naszályi Nagy**, Barbara Császár, Judith Mihály, András Wacha, Balázs Magda, Tímea Imre, Attila Bóta
Complex $\text{SiO}_2@\text{ZrO}_2@\text{poly}(\text{malic acid})$ nanoparticles for the prolonged release of eflornithine
- 14:20 - 14:40 O27 **Tamás Tábi**, József Gábor Kovács
Development of long basalt fiber reinforced injection molded poly(lactic acid) biocomposites
- 14:40 - 15:00 O28 **Gábor Bordós**, Judit Háhn, Mátyás Hartman, Balázs Kriszt, Viktória Vargha, Sándor Szoboszlai
Investigation of the microbiological degradation of plastic films
- 15:00 - 15:20 O29 **Stefan Chmela**, Klaudia Czaniková, Katarina Mosnácková, Jaroslav Mosnácek, György Kasza, Attila Nádor, Ákos Szabó, Zsófia Szabó, Györgyi Szarka, Béla Iván
New types of phenolic polymeric/oligomeric stabilizer and their testing in PE and PP photo-oxidation
- 15:20 - 15:30 **CLOSING**

Investigation of the microbiological degradation of plastic films

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In recent studies degradation of plastics was tested after remarkable abiotic treatment [1; 2]. None of these pre-treating conditions (simulating month, years of aging, etc.) stands at any kind of waste management system (composting, landfills) although the aim of these packages is to be able to utilize as biowaste. Thus the aim of this study is to investigate the real biodegradation of oxo-biodegradable films and bioplastics in industrial composting and laboratory environment and to isolate bacterial strains capable of plastic degradation.

Different kinds of films were buried in an aerated composting pile in duplicate. After six weeks bioplastics were mostly disintegrated. Observable visual changes didn't occur on oxo-biodegradable and control PE films, also measurable weight loss wasn't detected.

Microbiological availability of plastics from renewable and non-renewable raw materials was tested in laboratory conditions by respiration test. Bacterial strains applied in these experiments were isolated from plastic films' surface stored in compost and soil. 31 isolated strains were identified on basis of 16S rRNA gene sequence analysis and two of them proved to be potentially new strains (*Acinetobacter* sp. nov. and *Microbacterium* sp. nov.). Bioplastics (disintegrated in compost), oxo-biodegradable PE and PE films were tested based on the production of CO₂ in "Oxitop" flasks. Powdered films and liquid media were used, experiments ran for 60 days in duplicate. Result verifies the composting experiences; due to microbiological activity the bioplastics showed better transformation than the oxo-biodegradable and commercial PE films.

Further experiments are needed for appropriate comparison and definition of biodegradation levels, but it is justified, that PE films with oxo-biodegradable additives are not suitable for biological waste treatment processes, because of the absence of the main aging/weathering condition, the UV irradiation.

Acknowledgement

Authors thank to Research Centre of Excellence 17586-4/2013/TUDPOL and TÁMOP - 4.2.1. B-11/2/KMR-2011-0003 programs.

References

- [1] Fontanella, S., Bonhomme, S., Brusson, J-M., Pitteri, S., Samuel, G., Pichon, G., Lacoste, J., Fromageot, D., Lemaire, J., Delort, A-M.: *Polym. Degrad. Stab.*, **2013**, 98, 875-884
- [2] Abrusci, C., Pablos, J. L., Corrales, t., Lopez-Marin, J., Marin, I., Catalina, F.: *Int. Biodeterior. Biodegrad.*, **2011**, 65, 451-459