

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

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POLYFRIEND

BIO-FRIENDLY POLYMERS AND POLYMER ADDITIVES (BPPA14)
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2007-2013

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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**

Effect of composting on the behaviour of polyolefin films

Viktória Vargha¹, Tamás Csoknyay¹, Gábor Bordós², Mátyás Hartman², Judit Háhn², László Korecz³, Györgyi Szarka⁴, Zsolt László⁵, Ottó Kelemen⁶, Sándor Szoboszlai²

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Virgin polypropylene (PP), high-, middle- and low density polyethylene (HDPE, MDPE, LDPE) films, as well as pro-oxylative additives and thermoplastic starch (TPS) containing MDPE films were composted for six weeks together with biologically degradable films, such as poly lactic acid (PLA), Ecovio, Mater Bi and cellophane. Visual appearance of the polyolefin-based films did not change significantly, while the biologically degradable films fell apart. Thickness and mechanical properties of the polyolefin-based films also did not vary significantly after composting. The thickness of the degradable films however increased due to biofilm formation or decreased due to degradation, and their mechanical properties drastically dropped. FTIR proved the formation of or increase in carbonyl absorption (virgin and additive-containing films respectively) after composting due to oxydation. The FTIR-spectrum of the biodegradable films showed drastic change after composting. Formation of free radicals was detectable by ESR-spectroscopy, if pro-oxidative additive containing MDPE film was exposed to sunshine, and the intensity of free radical formation increased after composting. The weight-average molecular mass of MDPE films containing pro-oxidative additives decreased, low molecular mass fractions appeared and polydispersity significantly changed after composting. Virgin polyolefin films were covered by microorganisms much more densely than films containing pro-oxylative additives detected by SEM. The presence of TPS slightly increased the quantity of microorganisms. Degradable films were densely covered by microorganisms of different type and porosity of the films and holes were observable. It can be concluded that composting had no significant effect on the behaviour of the virgin PP and PE films. Signs of initial degradation were observable on MDPE films with pro-oxylative additives and TPS after 6 weeks composting, although it is not biological degradation. Non of the tested polyolefin films suffered such degree of degradation in compost, than the biologically degradable films.

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