

# 7<sup>th</sup> INTERNATIONAL CONFERENCE ON LEAD-ACID BATTERIES

9 - 12 JUNE, 2008, VARNA, BULGARIA



# PROCEEDINGS

(EXTENDED ABSTRACTS)

ORGANIZER:  
LEAD-ACID BATTERIES DEPARTMENT  
INSTITUTE OF ELECTROCHEMISTRY AND ENERGY  
SYSTEMS (IEES)  
BULGARIAN ACADEMY OF SCIENCES  
SOFIA 1113, BULGARIA

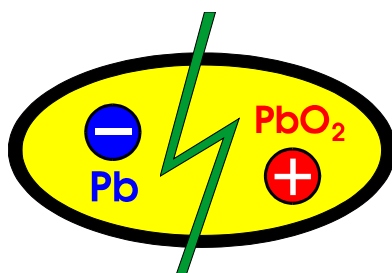
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**7<sup>th</sup> INTERNATIONAL CONFERENCE  
ON LEAD-ACID BATTERIES**

**LABAT'2008**

**9 - 12 June 2008  
Grand Hotel VARNA  
VARNA, BULGARIA**



**PROCEEDINGS  
(Extended Abstracts)**

**Organized by:**

**LEAD-ACID BATTERIES DEPARTMENT  
Institute of Electrochemistry and Energy Systems (IEES)  
Bulgarian Academy of Sciences  
Sofia1113, BULGARIA**

**Sponsor:**

**MONBAT PLC, Montana, Bulgaria**

**The PROCEEDINGS** has been compiled  
by **Dr. Geno Papazov**  
IEES - BAS, Sofia, Bulgaria

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## ORGANIZER:

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INSTITUTE OF ELECTROCHEMISTRY AND ENERGY SYSTEMS (IEES)  
BULGARIAN ACADEMY OF SCIENCES  
SOFIA 1113, BULGARIA

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The Gaston Planté Medal will be awarded to the next recipient, selected by an International Planté Medal Committee, for significant contribution to the development of lead-acid battery science and technology.

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Dr. Paul Ruetschi, <i>Leclanche S.A., Switzerland</i>	1993
Prof. Detchko Pavlov, <i>IEES, Bulgaria</i>	1994
Dr. Kathryn Bullock, <i>Medtronic, Inc., USA</i>	1996
Dr. David A.J. Rand, <i>CSIRO, Australia</i>	1996
Dr. Norman Bagshaw, <i>NEB Consultants, UK</i>	1999
Mr. John Devitt, <i>Consult. Electrical Engineer, USA</i>	1999
Dr. David Prengaman, <i>RSR Corporation, USA</i>	2002
International Lead Zinc Research Organization, <i>USA</i>	2002
Prof. Zen-Ishiro Takehara, <i>Kansai University, Japan</i>	2005

### 2008 GASTON PLANTÉ MEDAL NOMINEES

Dr. Patrick Moseley, *ILZRO/ALABC, USA*  
Dr. Robert Nelson, *Axion Power Battery Manufacturing, USA*  
Dr. Kenneth Peters, *LDA Consultant, UK*

## About the Lead-Acid Batteries Department of IEES

Founded 41 years ago as an independent institute of the Bulgarian Academy of Sciences, the **Institute of Electrochemistry and Energy Systems (IEES) (formerly CLEPS)** carries out fundamental and applied research and development in the field of conventional and novel electrochemical power sources, e.g. lead-acid batteries, metal-air systems, solid-state elements, Li-ion primary cells and secondary batteries, electrochemical bio-sensors, etc.



The **Lead-Acid Batteries Department (LABD)** is one of the basic departments of IEES. The LABD team, headed by Prof. D. Pavlov, is recognized worldwide for its contribution to the fundamental understanding of the electro-chemistry of lead electrodes, the processes taking place during battery production and operation as well as for the development of new technologies and advanced materials for LAB manufacture. The research work is supported by up-to-date scientific equipment, modern technological laboratory and computerized test facilities.

The technological laboratory of LABD is equipped with vacuum paste mixer (Eirich, Germany), curing chamber (Weiss, Germany), laboratory facilities for the production of test batteries and cells, and a laboratory-scale computer-controlled installation for modification of AGM separators.

The testing laboratories are outfitted with computerized equipment from Bitrode (USA) (70 channels, 10, 25, 50, 200 and 300 Amps) and Arbin (USA) that allow testing of all types of lead-acid batteries and cells according to various test standards adopted in the battery practice.

Based on extensive theoretical knowledge, experimental battery test results obtained and additional material science analyses (incl. X-ray, SEM, TEM, porometry, TGA, DSC, etc.), the LABD team can provide expert evaluation of the performance of batteries and give recommendations related to the optimization of the technology of battery manufacture or to solving specific technological problems.



No.	CONTENTS	Page
1	The function of carbon in the negative plates of VRLA batteries exposed to high-rate partial-state-of-charge operation <i>P.T.Moseley</i>	1
2	Negative plate additives for improving HRPSoC operation of lead-acid batteries <i>P.Nikolov, G.Petkova, T.Rogachev, D.Pavlov</i>	5
3	Study of graphite addition to negative active material of VRLA batteries to improve life under high-rate partial-state-of-charge working conditions <i>M.Fernandez, J.Valenciano, J.M.Lacadena, L.Sanz, F.Trinidad</i>	9
4	Lead-acid batteries for partial-state-of-charge applications <i>B.Hariprakash, S.A.Gaffoor, A.K.Shukla</i>	13
5	Studies of doped negative VRLA battery electrodes <i>K.Micka, M.Calabek, P.Baca, P.Krivak, R.Labus, R.Bilko</i>	17
6	Thin Plate Pure Lead VRLA designs for fast charge motive power and HEV applications <i>R.Kurian, M.Pope, W.Coldrick</i>	21
7	Influence of carbon based microcellular structures on the performance of Firefly Energy battery negative plates <i>B.Monahov, K.Kelley, M.Alkhateeb, R.McDuff</i>	27
8	Simulation of the current distribution in lead-acid batteries to investigate the dynamic charge acceptance in SLI batteries <i>J.Kowal, D.Schulte, D.U.Sauer, E.Karden</i>	29
9	New continuous processes and alloys for production of positive grids <i>R.D.Prengaman, T.Ellis</i>	33
10	Electrochemical behavior of thin layer of lead deposited on neutral matrix <i>A.Czerwiński, I.Paleska, M.Bodziachowska, J.Kotowski, M.Walczak, Sz.Obrębowski, Z.Rogulski</i>	37
11	Cutting lead cost by direct using scrap for grid making <i>T.Hofmann, H.Warlimont</i>	41
12	Influence of a surface structure on electrochemical behaviour of lead film electrodes LAB <i>L.Yolshina, V.B.Malkov, A.N.Yolshin</i>	45
13	Study on the microstructure of different sites of cast ingot of lead calcium alloys <i>W.Guo, H.Li, H.Chen, M.Tang, H.Zhou, H.Wang, S.Peng, W.We</i>	49
14	A study on corrosion of cast-on-strap alloy <i>A.Li, H.Chen, C.Dou, G.Xiao, S.Peng, W.We, H.Wang, W.Zhang, S.Chen, Y.Zhao,</i>	55
15	Effect of temperature for the oxygen evolution reaction on the electrodes Pb-base alloys and PbO <sub>2</sub> <i>M.Sánchez-Pastén, J.M.Hallen-Lopez, E.M.Arce-Estrada</i> No abstract submitted	
16	New methods of lead and lead-antimony alloys refining <i>A.I.Rusin, L.D.Khegay</i>	59



17	Anodic behavior of lead alloys in sulphate electrolytes <i>Ts.Dobrev, Y.Stefanov, Iv.Valchanova, Sn.Magaeva</i>	61
18	Plates soaking prior formation and its influence on PAM phase composition and battery performance <i>M.Foudia, L.Zerroual, M.Matrkova</i>	65
19	Preparation of thin electrodes using nanometric materials for VRLA batteries <i>A.Caballero, M.Cruz, L.Hernan, J.Morales, J.Valenciano</i>	69
20	Influence of H <sub>2</sub> SO <sub>4</sub> /(Pb <sub>3</sub> O <sub>4</sub> + leady oxide) ratio on the phase composition, structure and performance parameters of lead-acid battery positive plates <i>G.Papazov, D.Pavlov</i>	73
21	Mechanism of micro/nanoporosity formation in lead acid negative plates. <i>C.V.D'Alkaine, G.A. de O.Brito</i>	79
22	Numerical simulation of electrolyte particle trajectory to investigate battery cover design characteristics <i>V.Esfahanian, H.M.Darian, H.Babazadeh, M.Aghvami, R.Pasandeh, H.Abedinpour</i>	83
23	Modified conductometric method for measurement of resistance of collector corrosion layer <i>M.Calabek, P.Baca, R.Labus, P.Abraham</i>	87
24	Tetrabasic sulphate a maturing technology <i>I.Klein</i>	91
25	Pro-Ox curing technology <i>C.Catelli</i>	95
26	Formation systems with acid recirculation technology – the Inbatec design <i>C.Papmahl, F.Woeffler</i>	97
27	Small to medium sized lead-acid battery recycling plants: Tilting Rotary Furnaces as reduction units <i>J.Simpson</i>	101
28	Reliability of the lead acid batteries: impact of the manufacturing process <i>J.M.Lasserre</i>	105
29	Charge tracking, complete process control <i>R.Jonach</i>	
	No abstract submitted	
30	Lead and lead-acid battery industry in China <i>H.Chen</i>	109
31	Recovery of discarded sulfated lead-acid batteries <i>H.Karami, R.Asadi</i>	113
32	New charging methods based on real time battery acceptance measurements allowing charge and destratification simultaneously for reduced charge time applications <i>K.Mamadou, P.N'Guyen, Ch.Glaize, E.Lemaire_Potteau, J.Alzieu</i>	117
33	Study of the “coup de fouet” phenomena occurring in the start of discharges and charges of lead-acid batteries. Experimental analysis <i>A.Delaille, M.Perin, F.Huet</i>	121

34	State of charge estimation using a neural network cascade <i>S.Vajda</i>	No abstract submitted
35	Automatic device for continuous measurement of current distribution and acid stratification in flooded lead-acid batteries <i>D.Schulte, T.Sanders, W.Waag, J.Kowal, D.U.Sauer</i>	125
36	Advancements in power storage testing for HEV development <i>R.Schaefer</i>	No abstract submitted
37	VRLA battery float service life estimation using a Kalman filter <i>W.L.Burgess</i>	129
38	Development of battery health monitoring system for standby lead-acid batteries <i>S.Joshi, R.Jakkli, Y.Kulkarni</i>	133
39	12V Battery – SOH degradation in the field. Analysis of 300 samples coming from Renault Clio II. <i>C.Hiron, W.Bogel, T. Vu Mai, C.Anis-Legay</i>	137
40	Failure modes of valve-regulated lead-acid batteries in electric bicycle applications <i>Y.Guo, S.Tang, G.Meng, S.Yang</i>	143
41	Joint state of charge and state of health estimation for lead-acid battery <i>E.Ramezani, M.S.Rahmanifar, A.Oweisi, S.A.Mousavi</i>	No abstract submitted
42	Thermal behaviour of small battery during closed oxygen cycle <i>D.Valkovska, T.Todorov, M.Dimitrov, D.Pavlov</i>	147
43	Kinetics of PbO <sub>2</sub> electrodeposition from methanesulfonic solutions <i>A.B.Velichenko, E.V.Gruzdeva, T.V.Luk'yanenko, F.I.Danilov, R.Amadelli</i>	153
44	PbO <sub>2</sub> electrodeposition from methanesulfonic electrolytes and physicochemical properties of the resulting oxides <i>R.Amadelli, E.V.Gruzdeva, T.V.Luk'yanenko, A.B.Velichenko</i>	157
45	Pulse charge of the lead-acid battery negative plate – influence of state of charge and frequency on the reaction mechanism <i>A.Kirchev, F.Mattera, E.Lemaire, K.Dong</i>	161
46	Influence of Mg, Al, Co, Sn and Sb on the structure of doped βPbO <sub>2</sub> <i>M.Matrakova, D.Pavlov, N.Chahmana, L.Zerroual</i>	165
47	Influence of Mg <sup>2+</sup> , Al <sup>3+</sup> , Co <sup>2+</sup> , Sn <sup>2+</sup> and Sb <sup>3+</sup> on the electrical performance of doped βPbO <sub>2</sub> <i>N.Chahmana, L.Zerroual, M.Matrakova</i>	171
48	Behavior of lignosulfonate on electrochemical reaction on lead electrode in sulfuric acid solution <i>N.Hirai, Y.Kimura, H.Vermesan, S.Kubo, K.Magara</i>	175
49	Numerical simulation of acid stratification in lead-acid batteries <i>V.Esfahanian, F.Torabi</i>	179

50	Improvement of lead-acid battery utilization through adaptive cut off voltage <i>E.Ramezani, A.Oweisi, M.S.Rahmanifar, S.A.Mousavi</i>	
		No abstract submitted
51	Visual modeling of electrochemical processes <i>M.Semenenko</i>	183
52	Mixed model of lead-acid battery <i>K.Untener, G.Gajdatsy, J.Kokavec, T.Mihalfy, A.Kovats, N.Iwane</i>	187
53	Critical analysis of experimental plate impedance <i>P.R.Impinnisi, P.Mengarda, C.V.D'Alkaine</i>	191
54	Advanced car battery design based on aesthetic and ergonomic elements <i>A.Faraji, A.H.Tehrani</i>	195
55	Lead-acid battery industry in China <i>Z.Wang</i>	
		No abstract submitted
56	New chemical polymeric hydrogel-based current sources <i>I.E.Suleimenov, E.N.Suleimenov</i>	199
57	Flexible hybrid supercapacitor power system <i>M.Mladenov, P.Zlatilova, S.Vassilev, N.Petrov, K.Belov, V.Trenev, D.Kovacheva</i>	203
58	Ion transport in battery in the present of current <i>F.Coupan, I.Marie-Joseph, A.Primerose, I.Sadli, H.Clergeot</i>	207
59	Morphology and anodic polarization behavior of solid solution coatings of RuO <sub>2</sub> and TiO <sub>2</sub> <i>M.Yousefpour</i>	211
	Authors' index	215