



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

**LABAT'2017** 13 – 16 June 2017, Golden Sands, BULGARIA

## TENTATIVE PROGRAM

Conference Day 1 - Tuesday, 13 June 2017		
08:30		<b>OPENING CEREMONY</b> Welcome to delegates <i>D. Pavlov</i> , Chairman of LABAT'2017
08:40		<b>Welcoming addresses</b>
<b>Morning session (09:00 - 12:45)</b> Chairman: <i>Dr. Timothy Ellis</i> Secretary: <i>Dr. Albena Aleksandrova</i>		
<b>LEAD-CARBON ELECTRODES</b>		
09:00	1	<b>Major research and development trends in the ILA/ALABC strategy</b> <i>B. Monahov</i> , ILA/ALABC, USA
09:25	2	<b>Microstructure and electrochemical studies on carbon nanomaterial additives for positive active mass of industrial cells</b> <i>F. Trinidad</i> , Exide Technologies S.L.U, Spain <i>A. Larrea, A. Orera</i> , Instituto de Ciencia de Materiales de Aragón, Spain <i>H. Niepraschk</i> , Exide Technologies Operations GmbH & Co., Germany
09:50	3	<b>Carbon additives in advanced lead-acid batteries – solutions and opportunities</b> <i>P. Atanassova, A. Du Pasquier, M. Oljaca</i> , Cabot Corporation, USA <i>P. Nikolov, M. Matrakova, D. Pavlov</i> , IEES-BAS, Bulgaria
10:15		<i>Coffee/Tea break, Exhibition &amp; Poster Viewing</i>
11:00	4	<b>Effects of surface chemistry of carbon on hydrogen evolution reaction in lead-carbon electrodes</b> <i>B. Bozkaya, J. Settelein, H. Lormann, G. Sextl</i> , Fraunhofer Institute for Silicate Research, Germany
11:25	5	<b>Carbons for advanced lead-acid batteries: properties and role</b> <i>D. Cericola, M. Spahr</i> , Imerys Graphite & Carbon, Switzerland
11:50	6	<b>Electrochemical evaluation of lead-carbon electrodes for micro hybrid vehicle applications</b> <i>M. Blecua, E. Fatás, P. Ocón</i> , Universidad Autónoma de Madrid, Spain <i>J. Valenciano, F. de la Fuente, F. Trinidad</i> , Exide Technologies, Spain
12:15		<b>Exhibitor's presentations</b> Inbatec GmbH, Germany Shandong JINKELI Power Sources Technology Co., Ltd., China CMWTEC Technologie GmbH, Germany
12:45		<i>Lunch</i>
<b>Afternoon session (14:00 - 18:20)</b> Chairman: <i>Prof. Carlos D'Alkaine</i> Secretary: <i>Dr. Albena Aleksandrova</i>		
14:00	7	<b>Surface modifications of carbon additives for reducing hydrogen evolution</b> <i>A. Du Pasquier, A. Korchev, D. Miller, B. Merritt, P. Atanassova</i> , Cabot Corporation, USA

14:25	8	<b>Carbon's impact on active material utilization in advanced lead-acid batteries using thin plate technology</b> <i>J. Lannelongue, A. Kirchev, M. Cugnet, CEA-INES, France</i>
14:50	9	<b>How to develop best carbon/graphite products for lead-carbon battery applications</b> <i>J. Li, F. Henry, Y. Feng, Superior Graphite, USA</i>
15:15		<b>Exhibitor's presentations</b> TBS Canada Inc., Canada TC Machinery Co., Ltd., Taiwan Imerys Graphite & Carbon, Switzerland STC s.r.l., Italy
15:55		<i>Coffee/Tea break, Exhibition &amp; Poster Viewing</i>
16:40	10	<b>MOLECULAR REBAR® discrete carbon nanotubes for lead-acid batteries</b> <i>J. Meyers, P. Everill, S. Swogger, N. Sugumaran, Black Diamond Structures, USA</i>
17:05	11	<b>Carbon enhanced VRLA battery for frequency regulation in energy storage system</b> <i>J. Xiang, J. Chen, P. Ding, Narada Power Source Co., China</i>
17:30		<b>Exhibitor's presentations</b> PINCO S.A., Switzerland Amer-Sil S.A., Luxembourg Accuma S.p.A., Italy Jiangsu CEMT Energy Equipment Co.,Ltd.,China ACCUMALUX S.A., Luxembourg
		<b>Posters</b>
	12	<b>Determining the electrochemical activity of carbon additives in diluted sulfuric acid with focus on the hydrogen evolution reaction (poster)</b> <i>J. Settelein, B. Bozkaya, H. Lormann, Fraunhofer Institute for Silicate Research, Germany</i> <i>G. Sextl, University of Wurzburg, Germany</i>
	13	<b>Effect of carbon additives to the negative active mass of the lead-acid batteries: an impedance spectroscopy study (poster)</b> <i>V.O. Danilova, M.M. Burashnikova, S.D. Gricenko, M.A. Samsonov, I.A. Kazarinov, Saratov State University, Russia</i>
	14	<b>Synthesis of highly controllable 2D <math>\alpha/\beta</math> PbO<sub>2</sub>/nano-SiO<sub>2</sub> by composite electrodeposition for high-performance lead-carbon battery (poster)</b> <i>J. Bao, W. Zhang, H. Lin, Zh. Lin, J. Yin, J. Shi, C. Wang, D. Liu, Y. Wang, Jilin University, China</i> <i>H. Lu, Guangdong Guanghua Sci-Tech Co., Ltd., China</i> <i>Y. Wang, H. Li, Jilin kaiyu Electrochemical Energy Storage Technologies Development Co., Ltd., China</i>
	15	<b>Lead-carbon composite prepared by electroless plating and its influence on the negative electrode of lead acid battery (poster)</b> <i>J. Yin, W. Zhang, H. Lin, Zh. Lin, Y. Wang, C. Wang, J. Shi, J. Bao, D. Liu, Jilin University, China</i> <i>H. Lu, Guangdong Guanghua Sci-Tech Co., Ltd., China</i> <i>Y. Wang, H. Li, Jilin kaiyu Electrochemical Energy Storage Technologies Development Co., Ltd., China</i>
	16	<b>The modification of carbon surface by PbO - a method to improve the effects of carbon in the negative plates of lead-acid battery (poster)</b> <i>Zh. Lin, J. Yin, H. Lin, W. Zhang, J. Shi, J. Bao, Y. Wang, Jilin University, China</i> <i>Y. Wang, H. Li, Jilin kaiyu Electrochemical Energy Storage</i>

		Technologies Development Co., Ltd., China
	17	<b>A new type of acid-free battery with high cycle life</b> ( <i>poster</i> ) Y. Wang, W. Zhang, <u>H. Lin</u> , Zh. Lin, J. Yin, J. Shi, C. Wang, D. Liu, J. Bao, Jilin University, China H. Lu, Guangdong Guanghua Sci-Tech Co., Ltd., China Y. Wang, H. Li, Jilin kaiyu Electrochemical Energy Storage Technologies Development Co., Ltd., China
	18	<b>Effect of electrodes and cell structures on the properties of the PbO<sub>2</sub>//C-Pb quasi-symmetric supercapacitor</b> ( <i>poster</i> ) <u>M. Mladenov</u> , L. Stoyanov, S. Vassilev, L. Soserov, IEES-BAS, Bulgaria
18:20		<i>Adjournment</i>

## Conference Day 2 - Wednesday, 14 June 2017

<b>Morning session (08:30 - 12:40)</b> Chairman: <b>Dr. Boris Monahov</b> Secretary: <b>Dina Ivanova</b>		
08:30	19	<b>Performances of lead-carbon electrode based on rice-husk-derived carbon under partial state of charge operation</b> <u>W. Zhang</u> , H. Lin, Zh. Lin, J. Yin, J. Shi, C. Wang, D. Liu, Y. Wang, J. Bao, Jilin University, China H. Lu, Guangdong Guanghua Sci-Tech Co., Ltd., China Y. Wang, H. Li, Jilin kaiyu Electrochemical Energy Storage Technologies Development Co., Ltd., China
08:55	20	<b>Nano structured reduced graphene oxide (RGO) coated TiO<sub>2</sub> as negative electrode additive for advanced lead-acid batteries</b> <u>N. Vangapally</u> , S. Jindal, S.K. Martha, Indian Institute of Technology, India A. Gaffoor, NED Energy Ltd., India
09:20	21	<b>Triangle-shaped graphene domains by LP-CVD and update of graphene application in motive power battery</b> <u>G.P. Dai</u> , Chaowei Power Ltd., China
09:45	22	<b>Elementary processes taking place during charge and discharge of lead-acid batteries</b> <u>D. Pavlov</u> , IEES-BAS, Bulgaria
10:10		<b>Exhibitor's presentations</b> Abertax Technologies Ltd., Malta Engitec Technologies S.p.A, Italy Arexim Engineering EAD, Bulgaria
10:50		<i>Coffee/Tea break, Exhibition &amp; Poster Viewing</i>
11:30		<b>GASTON PLANTÉ MEDAL Ceremony</b>
12:40		<i>Lunch</i>
<b>Afternoon session (14:00 – 18.05)</b> Chairman: <b>Dr. Francisco Trinidad</b> Secretary: <b>Dina Ivanova</b>		
<b>LEAD-ACID BATTERY ACTIVE MASSES</b>		
14:00	23	<b>Gas evolution, recombination and grid corrosion in a VRLA battery under high temperature operating conditions</b> <u>S. Chalasani</u> , G. Mathiesen, East Penn Manufacturing Co., Inc., USA
14:25	24	<b>A third stable potential in lead-acid batteries</b> <u>C. D'Alkaine</u> , F. Plut, H.R. de Freitas, Federal University of Sao Carlos, Brazil

14:50	25	<b>Electroreduction kinetics of lead sulfate in lead-acid battery negative electrode</b> <i>Y. Hamano, I. Ban, K. Hirakawa, Y. Yamaguchi</i> , GS Yuasa International, Japan
15:15	26	<b>In-situ X-ray study of lead sulfation in sulfuric acid environment</b> <i>L. Chladil, P. Vanysek, O. Cech, P. Baca</i> , Brno University of Technology, Czech Republic
15:40		<i>Coffee/Tea break, Exhibition &amp; Poster Viewing</i>
16:25	27	<b>Enhancing the performance of lead-acid batteries by additives to the negative active mass</b> <i>P. Nikolov, M. Matrakova, A. Aleksandrova, D. Pavlov</i> , IEES-BAS, Bulgaria
16:50	28	<b>Addition effects of aluminum or magnesium ions on the electrochemical behavior of lead electrode in sulfuric acid solution with potassium sulfate</b> <i>H. Hirai, K. Kawakiuta, Y. Yamamoto</i> , National Institute of Technology, Japan
17:15	29	<b>Effect of organic additives on the lead-acid battery negative and positive electrodes</b> <i>A. Aleksandrova, St. Ruevski, P. Nikolov, M. Matrakova</i> , IEES-BAS, Bulgaria
17:40	30	<b>Combined effect of fibrous structures and other additives in NAM</b> <i>P. Vanysek, S. Vaculik, P. Baca, P. Cudek, P. Vanysek</i> , Brno University of Technology, Czech Republic
		<b>Posters</b>
	31	<b>XRD characterization of negative electrode mass of lead-acid batteries (poster)</b> <i>O. Cech, L. Chladil, P. Vanysek, Z. Zimakova, P. Krivik, S. Vaculik, P. Baca</i> , Brno University of Technology, Czech Republic
	32	<b>Possibilities of using glass fibers in negative active mass (poster)</b> <i>J. Zimakova, S. Vaculik, P. Baca, P. Cudek, P. Vanysek</i> , Brno University of Technology, Czech Republic
	33	<b>Analysis on the deterioration mechanism of lead-acid batteries (poster)</b> <i>H. Hirano, T. Kimura, K. Sumiya</i> , Hitachi Chemical Co., Ltd., Japan
	34	<b>The influence of various dopants on initial stages of lead dioxide electrocrystallization from nitrate and methanesulfonate electrolytes (poster)</b> <i>O. Shmychkova, T. Luk'yanenko, A. Velichenko</i> , Ukrainian State University of Chemical Technology, Ukraine
	35	<b>Method and device for lead-acid battery operating under critical applications (poster)</b> <i>V. Naidenov</i> , IEES-BAS, Bulgaria <i>B. Shirov</i> , TASC, Bulgaria
	36	<b>Modification of the composition positive mass electrodes in lead-acid batteries (poster)</b> <i>E. Jankowska, W. Majchrzycki, M. Błazejczak</i> , Central Laboratory of Batteries and cells, Poland <i>G. Lota, M. Baraniak, J. Pernak</i> , Poznan University of Technology, Poland <i>W. Rzeszutek</i> , PPUH Autopart Jacek Bak sp. z.o.o. , Poland
	37	<b>Influence of surfactant additives on performances of lead-acid batteries (poster)</b> <i>M. Xie, Y. Chen, Y. Gu, X. Wu</i> , Huazhong University of Science and Technology, China <i>X. Li</i> , University of Exeter, UK <i>N. Brandon</i> , Imperial College London, UK
18:05		<i>Adjournment</i>
19:30		<b>Gala banquet</b>

## Conference Day 3 - Thursday, 15 June, 2017 - HALL 1

<b>Morning session (08:30 - 12:15)</b> Chairman: <b>Dr. Hermann Giess</b> Secretary: <b>Dr. Plamen Nikolov</b>		
<b>08:30</b>	38	<b>Effect of cured PAM density and amount of tribasic lead sulfate on utilization and deep cycling ability of positive plate in lead-acid battery</b> <i>A. Nishimura, M. Matsushita, J. Furukawa, Furukawa Battery Co., Ltd., Japan</i>
<b>08:55</b>	39	<b>Seeing inside lead-acid batteries using neutron imaging</b> <i>J. M. Campillo Robles, D. Soler, Mondragon University, Spain</i> <i>D. Goonetilleke, N. Sharma, School of Chemistry, UNSW, Australia</i> <i>U. Garbe, Australian Nuclear Science and Technology Organisation, Australia</i> <i>P. Türkyilmaz, Yiğit Akü Malzemeleri A.Ş., Turkey</i>
<b>09:20</b>	40	<b>Investigation of acid stratification in lead-acid batteries</b> <i>A. Hammouche, J. Bauer, S. Goertler, Johnson Controls Power Solutions EMEA, Germany</i>
<b>09:45</b>	41	<b>Enhanced deep cycle life performance for gel VRLA batteries</b> <i>A. Grigas, A. Azaibi, H. Niepraschk, Exide Technologies GmbH, Germany</i> <i>F. Trinidad, Exide Technologies S.L.U., Spain</i>
<b>10:10</b>		<i>Coffee/Tea break, Poster Viewing</i>
<b>10:35</b>	42	<b>Expander for standard and new battery applications. Start-Stop and HEV</b> <i>M. Fernandez, L. Pucket, C. Barreneche, North American Company APG, USA</i>
<b>11:00</b>	43	<b>On the electrochemical activity of beta-lead dioxide in sulfuric acid solution: a comparative study between the chemical and electrochemical routes</b> <i>I. Derafa, L. Zerroual, University Ferhat ABBAS, Algeria</i> <i>M. Matrakova, IEES-BAS, Bulgaria</i>
<b>11:25</b>	44	<b>Effect of glycine incorporated lead oxide and non-conventional nanostructured additives on the performance of lead acid battery</b> <i>S. Mayavan, S.M. Kumar, S. Arul, C. Arun, V. Muthumani, Central Electrochemical Research Institute, India</i>
<b>11:50</b>	45	<b>Application of silica sol in energy storage batteries</b> <i>T. Ban, G. Cao, W. Liu, Shandong Jinkeli Power Sources Technology Co.,Ltd, China</i> <i>S. Hua, Shandong University, China</i>
<b>12:15</b>		<i>Lunch</i>
<b>Afternoon parallel session (14:00 – 18:15)</b> Chairman: <b>Dr. Paolina Atanassova</b> Secretary: <b>Dr. Plamen Nikolov</b>		
<b>LEAD-ACID BATTERY TECHNOLOGY</b>		
<b>14:00</b>	46	<b>Experience with a new filling process for VRLA batteries in GEL technology</b> <i>K.D. Merz, J. Cilia, Abertax Technologies, Malta</i>
<b>14:25</b>	47	<b>Formation with acid recirculation technology – the Inbatec process</b> <i>Ch. Papmahl, Inbatec, Germany</i>
<b>14:50</b>	48	<b>Novel technology for production of lead-acid batteries by application of low energy impact technology (LEIT)</b> <i>V. Naidenov, IEES-BAS, Bulgaria</i> <i>B. Shirov, TASC, Bulgaria</i>
<b>15:15</b>	49	<b>Design and manufacturing criteria for high-performance, low-cost, large-format bipolar lead batteries</b> <i>E.O. Shaffer II, Advanced Battery Concepts, USA</i>
<b>15:40</b>		<i>Coffee/Tea break, Poster Viewing</i>



16:10	50	<p><b>Design, development and commercialization of new gas recombination vent plug for lead-acid batteries</b></p> <p><i>S. Joshi</i>, Greenvision Technologies Pvt., Ltd, India  <i>M. Hegde</i>, Indian Institute of Sciences, India</p>
16:35	51	<p><b>New separator approaches for lead-acid batteries</b></p> <p><i>R. Waterhouse, C. La, M. Warren, J. Kim, D. Wandera, J. Frenzel, J. Norris, D. Lee, C. Rogers, E. Hostetler, R. W. Pekala</i>, ENTEK International LLC, USA</p>
17:00	52	<p><b>The quality control during the lead-acid battery assembly production</b></p> <p><i>Y. Chen</i>, Jiangsu CEMT Energy Equipment Co., Ltd, China</p>
17:25	53	<p><b>Closed-loop predictive control for adherence to the commanded energy exchange with a VRLA battery</b></p> <p><i>G. Kujundžić</i>, Public Enterprise Croatian Telecom JSC, Bosnia &amp; Herzegovina  <i>M. Vasak</i>, University of Zagreb, Croatia</p>
17:50	54	<p><b>Intelligent systems for block charging batteries with PC controlled pulse current</b></p> <p><i>S. Gishin, V. Dimitrov</i>, Technical University, Bulgaria  <i>P. Goranov</i>, LCL Ltd., Bulgaria</p>
		<b>Posters</b>
	55	<p><b>Electrochemical evaluation of electrodes with nanostructured PbO and with carbon nanotubes for their use in lead-acid batteries (poster)</b></p> <p><i>M.F. Videa, L.M. Martinez Calderon</i>, Tecnologico de Monterey, Mexico  <i>C. Pardo, S. Perez-Garcia, L. Licea-Jimenez, M. Velasko-Soto</i>, Unidad Monterey, Mexico  <i>A. Morales-Sanchez, S. Garcia-Esparza, M. Trevino, J. Rodriguez</i>, Enerya SA de CV, Mexico</p>
	56	<p><b>Modelling of charging characteristics in terms of process parameters as temperature and acid density for controlling beta-PbO<sub>2</sub> phase (poster)</b></p> <p><i>P. Türkyılmaz, H. Apaydın, V. Karahan, Yiğit Akü A.Ş.</i>, Turkey</p>
	57	<p><b>Frequency stabilization of Island electricity grid: A new application for lead-acid batteries (poster)</b></p> <p><i>J. O'Donnell, C. Lenihan, N. Quill, D. Noel Buckley, R. Lynch</i>, University of Limerick, Ireland  <i>E. Pican</i>, Cork Institute of Technology, Ireland</p>
	58	<p><b>Preparation and properties of a porous membrane based on PTFE and PVDF for VRLA batteries (poster)</b></p> <p><i>A. A. Sapisheva, T.S. Khramkova, V.S. Shalayeva, M.M. Burashnikova, S.A. Klimova</i>, Saratov State University, Russia</p>
	59	<p><b>New routes to high performance lead-acid batteries (poster)</b></p> <p><i>L. Lei, Y. Zhou, J. Tai, B. Ma, Y. Liu, K. Zhang, W. Liu, P. Gao</i>, Southeast University, China</p>
	60	<p><b>A study on the flow field design of lead-acid batteries (poster)</b></p> <p><i>Y. Chen, L. Li, M. Xie, W. Du, J. Yang, X. Wu</i>, Huazhong University of Science and Technology, China  <i>N. Brandon</i>, Imperial College London, UK  <i>K. Scott</i>, Newcastle University, UK</p>
	61	<p><b>A study on the performance of the lead-air battery (poster)</b></p> <p><i>Y. Li, X. Wu</i>, Huazhong University of Science and Technology, China  <i>K. Scott</i>, Newcastle University, UK</p>
	62	<p><b>Advanced battery management system for extended energy storage capacity of EV battery (poster)</b></p> <p><i>K. Banov, B. Banov</i>, IEES-BAS, Bulgaria  <i>T. Dimitrov</i>, InoBatt Ltd., Bulgaria</p>
18:15		<b>Adjournment</b>

## Conference Day 3 - Thursday, 15 June 2017 - HALL 2

**Afternoon parallel session (14:00 – 18:15)**

Chairman: *Dr. Eberhard Meissner*

Secretary: *Ognian Dimitrov*

### LEAD-ACID BATTERY MODELLING

<b>14:00</b>	63	<p><b>Method for monitoring of a lead-acid cells operating in continuous charge mode at a constant voltage and rapid diagnosis of the main operating parameters in the emergency power systems</b></p> <p><i>A. Aleshkin, Y. Bubnov, V. Ruzhnikov</i>, AC Buster Ltd., Russia  <i>V. Yagnyatinsky</i>, NIISTA Jsc, Russia</p>
<b>14:25</b>	64	<p><b>Empirical sulfation model for VRLA Batteries under cycling operation</b></p> <p><i>M. Franke, J. Kowal</i>, Technical University Berlin, Germany</p>
<b>14:50</b>	65	<p><b>One-dimensional simulation of lead-acid cell using spectral collocation method</b></p> <p><i>J. Vashahri, V. Esfahanian</i>, University of Tehran, Iran</p>
<b>15:15</b>	66	<p><b>Uncertainty quantification and sensitivity analysis of lead-acid batteries</b></p> <p><i>H. Dehghandorost, V. Esfahanian, F. Chaychizadeh</i>, University of Tehran, Iran</p>
<b>15:40</b>		<i>Coffee/Tea break, Poster Viewing</i>
<b>16:10</b>	67	<p><b>Three-dimensional numerical simulation of lead-acid battery</b></p> <p><i>V. Esfahanian, H. Afshari, A. Pouyaei, A.B. Ansari</i>, University of Tehran, Iran</p>
<b>16:35</b>	68	<p><b>Unsupervised reduce order modeling of lead-acid battery using Markov chain model</b></p> <p><i>A.A. Shahbazi, V. Esfahanian</i>, University of Tehran, Iran</p>
		<b>Posters</b>
	69	<p><b>Efficient simulation of lead-acid battery using improved mathematical model (poster)</b></p> <p><i>V. Esfahanian, F. Chaychizadeh, H. Dehghandorost, A.B. Ansari, H. Shokouhmand</i>, University of Tehran, Iran</p>
	70	<p><b>Grid design and simulation of AGM battery (poster)</b></p> <p><i>O. Traisigkhachol, Z. Jin</i>, Johnson Controls Autobatterie GmbH, Germany</p>
	71	<p><b>Enhanced performance of the battery system in hybrid electric vehicle using fuzzy logic-based control of the charge/discharge rate (poster)</b></p> <p><i>M.J. Esfandyari, V. Esfahanian, M.R. Hairi Yazdi, H. Nehzati, M. Ayati</i>, University of Tehran, Iran</p>
	72	<p><b>Reduced order modeling of 2-D lead-acid battery considering free convection effect (poster)</b></p> <p><i>V. Esfahanian, A.B. Ansari, F. Torabi</i>, University of Tehran, Iran</p>
	73	<p><b>Cluster-based reduced-order modeling of lead-acid battery (poster)</b></p> <p><i>V. Esfahanian, A.A. Shahbazi</i>, University of Tehran, Iran</p>
<b>18:15</b>		<i>Adjournment</i>

## Conference Day 4 - Friday, 16 June 2017

**Morning session (08:30 - 13:30)**

Chairman: *Dr. Shashikan Joshi*

Secretary: *Dr. Iovka Milusheva*

### LEAD ALLOYS

08:30	74	<p><b>Novel lead-graphene and lead-graphite metallic composite materials for ne-gative electrode grid of lead-acid battery</b></p> <p><i>L. Yolshina, A. Yolshina</i>, Institute of High-Temperature Electrochemistry, Urals Branch of Russian Academy of Sciences, Russia  <i>A. Yolshin</i>, Graphene Ltd., Russia</p>
08:55	75	<p><b>The microstructural and morphological development of a Micro-Alloyed Soft Pb, SUPERSOFT-HYCYCLE®, for cycling applications</b></p> <p><i>M. Raiford, T. Ellis</i>, RSR Technologies, USA</p>
09:20	76	<p><b>On the electrochemical behaviour of Pb-Sb-Se alloy in sulfuric acid solution: effect of surfactants</b></p> <p><i>O. Saoudi, L. Zerroual</i>, University Ferhat ABBAS, Algeria  <i>M. Matrakova, A. Aleksandrova</i>, IEES-BAS, Bulgaria</p>
09:45	77	<p><b>Electrochemical evaluation of Pb-0.04%Ca-1.2%Sn-Sr for positive grid of lead-acid batteries</b></p> <p><i>A. Alagheband</i>, Islamic Azad University, Iran  <i>A. Kosari, M. Azimi</i>, Fedowski University of Mashhad, Iran  <i>D. Nakhaie</i>, The University of British Columbia, Canada  <i>M. Kalani</i>, University of Birjand, Iran</p>
10:10	78	<p><b>Present status of lead-rare earth alloys used in lead-acid batteries in China</b></p> <p><i>R. Zhao, H. Chen</i>, South China Normal University, China  <i>T. Zhang, H. Zhao, Z. Guo</i>, Tianneng Battery Group Company, China</p>

10:35 *Coffee/Tea break, Poster Viewing*

### BATTERY RECYCLING

11:00	79	<p><b>New route for secondary lead recycling, industrial plant experience from exhausted batteries to new ones</b></p> <p><i>G. Fusillo, F. Scura, R. Guerriero, G. La Sala</i>, STC s.r.l., Italy  <i>D. Rosestolato</i>, SIA Industria Accumulatori S.p.A., Italy</p>
11:25	80	<p><b>Hydrometallurgy from the lab to industry: green, sustainable and superior</b></p> <p><i>A. Fox, M. Freeman</i>, Aurelius Environmental Ltd., UK</p>
11:50	81	<p><b>Modern methods of disposal for lead-acid batteries</b></p> <p><i>A. Rusin, A. Kudryavtsev, O. Moroz</i>, Baltic Energy Company, Russia</p>
12:15	82	<p><b>Recovery methods of lead batteries</b></p> <p><i>A. Kudryavtsev, A. Rusin, O. Moroz</i>, Baltic Energy Company, Russia</p>
12:40	83	<p><b>Energy efficient and environment friendly technologies with pulse current and computer management for recycling of precious expensive metals from solid waste when recycling batteries</b></p> <p><i>S. Gishin</i>, AC Europe Ltd., Bulgaria  <i>I. Enchev</i>, MCBG S.A., Bulgaria  <i>V. Dimitrov</i>, LCL Ltd, Bulgaria</p>

13:05 *CLOSING THE CONFERENCE*

13:30 *Lunch*