アジア水化学シンポジウム2015参加報告

平成27年10月22日

日本原子力発電株式会社 久宗 健志

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秘密情報 目的外使用等禁止 2015年10月22日 日本原子力発電株式会社

日本原子力学会 水化学部会 第25回 定例研究会@四国電力(株) 総合研究所

1. アジア水化学シンポジウム開催実績

開催年	開催地
1993	台湾
1995	日本@東京(東大)
1997	台湾
1999	日本@東京(東大, 日本原電)
2001	台湾/韓国(個別開催)
2003	日本@福岡(九州電力)
2005	韓国
2007	台湾
2009	日本@名古屋(中部電力)
2011	日本@茨城(JAEA)→中止
2013	台湾
2015	インド
2017	中国(予定)

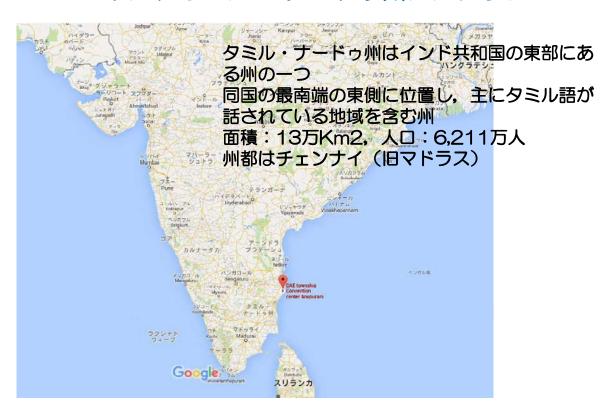
2. 開催概要(概況)

- 1. Symposium on Water Chemistry and Corrosion in Nuclear Power Plants in Asia-2015
- 2. 会期:2015年9月2日(水)~4日(金)
- 3. 場所:インド タミル・ナードゥ州アヌプラン
- 4. 主催: Indian Nuclear Society
- 5. 参加者: 4ヵ国 166名 (日本 7名, 韓国 7名, 台湾 2名, 印度 148名, ドイツ 2名)
- 6. 発表: 招待講演 10件, オーラル 21件, ポスター 52件

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インド タミル・ナードゥ州アヌプラン



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	Se	ptember 2 (Day-1)	
		nistry and Corrosion in Nuclear Powe nvention Centre, Anupuram, India	r Plants
Opening Ceremony		, , , , , , , , , , , , , , , , , , , ,	09:30 - 10:00
		Inauguration	
Plenary Session			10:00 - 11:05
Plenary Lecture 1	10:00 – 10:30	Prof. Yosuke Katsumura, JRIA, Jap AWC-102, "Current Situation of Nuclear Pov Fukushima Nuclear Accident"	
Plenary Lecture 2	10:30 – 11:00	Shri. U. C. Muktibodh, NPCIL, India AWC-160 "Chemistry and Corrosion Issues i Power Plants"	
Summing up	11:00 – 11:05		
Coffee Break			11:05 – 11:20
Session-1 Primary Sy	stem Operating E	xperience (PWRs/PHWRs/VVERs)	11: 20– 12:30
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Invited Talk 1	11:20 – 11:45	Dr. S. V. Narasimhan, BARC (Retd.), India, AWC-167 "Chemistry Management in Indian Nuclear Reactors"	
Technical Talk 1	11:45 – 12:05	Shri. P. Selvavinayagam, NPCIL, India, AWC-118 "Water Chemistry Experiences with VVER's at Kudankulam"	
Technical Talk 2	12:05 – 12:25	Dr. Hee-Sang Shim, KAERI, S. Kor AWC-150 "Prediction Method of Sub-Coole Boiling on the Nuclear Fuel Cladding in Prim Condition Using Acoustic Emission Technique	d Nucleate ary Water
Summing up	12:25 – 12:30	1	
Lunch Break			12:30 - 13:30
Session-2 Boiling Wa	ter Reactor / Adva	anced Reactor Experience	13:30 – 15:00
Invited Talk 2	13:30 – 13:55	Smt. Jayasree Sriram, BARC, India, AWC-157 "Water Chemistry Features of Advanced Heavy Water Reactor"	
Technical Talk 3	13:55– 14:15	Dr. Kenji Hisamune, JAPC, Japan, AWC-101 "Approach to Mitigate Intergranular Stress Corrosion Cracking and Dose Rate Reduction by Water Chemistry Control in Tokai-2"	
Technical Talk 4	14:15 – 14:35	Dr. Deepa Papachan, NPCIL, India AWC-133, "Fuel Performance Review at Taps 1&2 With Respect to Reactor Coolant Crud & Alpha Activity"	
Technical Talk 5	14:35 – 14:55	Dr. Subrata Bera, AERB, India. AWC-185, "Iodine Chemistry and Associated Interaction Under Severe Accident Conditions"	
Summing up	14:55 – 15:00		
Coffee Break			15:00 – 15:15

Session-3 Corrosion of Plant Materials			15:15 – 17:05
Invited Talk 3	15:15 – 15:40	Dr. Vivekanand Kain, BARC, India AWC-169, "Correlating Size of Scallops to S Accelerated Corrosion in Nuclear Power Plan	
Technical Talk 6	15:40– 16:00	Dr. Helmut Nopper, AREVA, Germa AWC-148, "FAC Surveillance Concept with Code COMSY"	any,
Technical Talk 7	16:00– 16:20	Prof. Yutaka Watanabe, Tohoku Un AWC-128, "Benchmark Study of Prediction I Wall Wastage"	
Technical Talk 8	16:20 – 16:40	Shri. Mahendra Prasad, AERB, Indi AWC-112, "Mass Transfer Coefficient Enha in Pipe Bend – 3 Dimensional Analysis"	
Technical Talk 9	16:40 – 17:00	Dr. Yasuhiro Chimi, JAEA, Japan, AWC-113, "Water Radiolysis Effect on IASC Behavior in BWR Water Conditions in Highly Austenitic Stainless Steel"	
Summing up	17:00 – 17:05		
Poster Session			17:05 – 19:00
Cultural Program	19:00 - 20:00	Convention Centre, Anupuram	
Dinner	20:00 - 21:30	(
	<u> </u>	End of first day	
	Se	ptember 3 (Day-2)	
Session-4 Decontamination and Dose Reduction 09:00 – 10			09:00 – 10:10
Invited Talk 4	09:00 – 09:25	Dr. S. Velmurugan, BARC, India, AWC-166 "Dose Reduction and Decontamination in Indian Nuclear Power Plant"	
Technical Talk 10	09:25 – 09:45	Shri. Osamu Shibasaki, Toshiba Corporation, Japan, AWC-115 "Co-60 Deposition on Carbon-Steel Structural Materials after Seawater Infiltration in BWR Plant"	
Technical Talk 11	09:45 - 10:05	Shri V. S. Sathyaseelan, BARC, India, AWC-162, "High Temperature Decontamination of Stainless Steel Surfaces"	
Summing up	10:05 - 10:10		
Coffee Break		_I	10:10 – 10:25

Session-5 Basic Resear	rch		10:25 – 11:35
Invited Talk 5	10:25 – 10:50	Prof. Xinqiang Wu, IMR, China, AWC-100 "Development Status of Nuclear and Some Fundamental Research Progress of Water Chemistry in China"	
Technical Talk 12	10:50 - 11:10	Dr. Puspalatha Rajesh, BARC, India, AWC-161, "Effect of High Concentration Gadolinium Nitrate in Reactor Moderator System"	
Technical Talk 13	11:10 – 11:30	Dr. P. Chandramohan, BARC, India, AWC-136, "Cation Distribution in Ferrites and its Effects on The Chemical Dissolution Behaviour"	
Summing up	11:30 – 11:35		
Session-6 Steam Cycle	e Performance and	Process Water Systems	11:35-13:05
Invited Talk 6		Dr. Christoph Michael Stiepani, AR	•
	11:35 – 12:00	Germany, AWC-130, "AREVA's Toolbox Best Performance and Reliable Operation of Generators"	_
Technical Talk 14	12:00 – 12:20	Dr. K. Ganapathy Subramanian, IGCAR, India, AWC -140, "Two Decades of Experience with Steam-Water Chemistry Maintenance of Fast Breeder Test Reactor"	
Technical Talk 15	12:20 - 12:40	Dr. P. K. Pal, NPCIL, India, AWC-105, "Identification of Boiler Tube Leak in RAPS-2 by Measuring Iodine-134 Activity in Boiler Water Sample of RAPS Using Gamma Spectrometric Techniques."	
Technical Talk 16	12:40 - 13:00	Dr. Meng Jen Chen, Taiwan power company Taiwan, AWC-170, "Improve Steam Generator Moisture Carryover Rate at Maanshan NPS by Cleaning Steam Drum Internal Sludge"	
Summing up	13:00 - 13:05		
Lunch Break			13:05 – 14:00
Session-7 Condenser Cooling Water Issues		ues	14:00 – 15:30
Invited Talk 7	14:00 – 14:25	Dr. V. P. Venugopalan, BARC, India, AWC-147, "Biofouling Control in Power Plant Cooling Water Systems: Challenges and Prospects"	
Technical Talk 17	14:25 – 14:45	Dr.Vinita Vishwakarma, Sathyabama University, India, AWC-149, "Nanophase Modified Fly Ash Concrete with Superior Concrete Properties, Durability and Biofouling Resistance for Seawater Applications"	
Technical Talk 18	14:45 – 15:05	Dr. B. Anandkumar, IGCAR, India, AWC-151 "Control of Biofouling on Titanium Condenser Tubes with The Use of Electroless Copper Plating"	

Technical Talk 19	15:05 – 15:25	Shri. A. K. Mohanty, IGCAR, India AWC-155 "Biofouling Community Pattern Metallic Surfaces in The Coastal Waters of Southwestern Bay of Bengal"	on Various
Summing up	15:25 – 15:30		
Coffee Break			15:30 – 15:45
Session-8 Future Tren	nds and New Deve	lopments	15:45 – 16:55
Invited Talk 8 Technical Talk 20	15:45 – 16:10 16:10 – 16:30	Dr. Alphonsa Joseph, IPR, India, AWC-109 "Plasma Nitrocarburizing Proces Improve Wear and Corrosion Resistance" Dr. B. Anupkumar, BARC, India, AWC-173 "Metal Ion Imprinted Polymers f	or Effective
Technical Talk 21	16:30 – 16:50	Radioactive Waste Segregation in Nuclear Industry" Shri. Jaymin Gandhi, Adani Infra India Ltd., India, AWC-121, "Environmental Sustainability by Adoption of Alternate Cooling Media for Condenser Cooling"	
Summing up	16:50 – 16:55		_
Coffee Break			16:55 – 17:10
Panel Discussion			17:10 – 18:00
Dinner	19:00-21:00	NPCIL Guest House, Kalpakkam	•
	En	ld of Second day	
	September 4 (Day-3)		
Technical Visit	9:30:12:00	Visit to Madras Atomic Power Station and NDDP, Kalpakkam	
Lunch	13:00 :14:00	Convention Centre, Anupuram	
End of Technical program			

Visit to 'DakshinaChitra'		'DakshinaChitra' is an exciting cross cultural living museum of art, architecture, lifestyles, crafts and performing arts
	14.00.10.00	of South India. (www.dakshinachitra.net)

Poster	Session (Sep 2^{nd} 2015, 17:05 - 19:00)
UID	Title and Authors
AWC-103	RADIOLYSIS OF WATER AT HIGH TEMPERATURE AND PRESSURE CONDITIONS: A PICOSECOND PULSE RADIOLYSIS EXPERIMENT AND NUMERICAL SIMULATIONS Yusa Muroya, Tetsuro Yoshida, Yosuke Katsumura, Shinichi Yamashita, Mingzhang Lin and Takahiro Kozawa
AWC-104	INJECTION OF NANO-PARTICLES IN MITIGATING FLOW ACCELERATED CORROSION(FAC) DAMAGE IN THE SECONDARY SYSTEM OF NUCLEAR POWER PLANTS(NPPS) Dong Seok Lim, Hee Kwon Ku and Jae Seon Cho
AWC-106	ADDITION OF OXYGEN IN THE INLET OF RECOMBINER UNIT IN MODERATOR COVER GAS SYSTEM TO FACILITATE RECOMBINATION OF DEUTERIUM AND OXYGEN TO BRING DEUTERIUM CONCENTRATION IN SAFE LIMITS P. K. Pal and S. Mukherjee
AWC-107	DETERMINATION OF MOISTURE CONTENT IN STEAMS BY ANALYZING SODIUM CONTENT IN STEAM GENERATOR WATER & STEAMS CONDENSATE OF A NUCLEAR POWER PLANT USING ION CHROMATOGRAPHIC TECHNIQUE AT DIFFERENT LEVELS OF BOILER WATER P.K.Pal and R.C.Bohra
AWC-108	EXPERIENCE ON KKNPP VVER 1000 MWe WATER CHEMISTRY
	S. Ganesh, S. Selvaraj, M.R. Balasubramanian, P. Selvavinayagam#, Suresh Kumar Pillai,
AWC-110	KINETICS OF DISSOLUTION OF Ni-Cr CONTAINING IRON OXIDES SERIES (NICR _X FE _{2-X} O ₄) IN HMnO ₄ MEDIUM V. Balaji, P. Chandramohan, Ashish Tiwari, S. Rangarajan and S. Velmurugan
AWC-111	MEASUREMENT OF HENRY'S LAW CONSTANT IN HYDROGENATED LIOH/H3BO3 SOLUTION E. H. Lee, G. G. Lee, D. H. Lee, and D. H. Hur
AWC-116	SEASONAL VARIATION IN TRIHALOMETHANE LEVELS AT KALPAKKAM AND IN RELATION TO ORGANIC CARBON PRECURSORS R. Rajamohan, V. P. Venugopalan and Usha Natesan
AWC-117	ROLE OF REDUCTANTS IN CONTROL OF CORROSION OF MATERIALS RELATED TO NUCLEAR REACTORS Padma S.Kumar, Sinu Chandran, Puspalata Rajesh, D.Mohan, S.Rangarajan and S.Velmurugan
AWC-119	IMPROVEMENT IN PERFORMANCE OF DM PLANT, SECONDARY SYSTEMS FOR ACHIEVING CHEMISTRY PERFORMANCE INDICATOR OF KGS-3&4 B.S.Sahu, P.G.Raichur, M Srinivas and M P Hansora
AWC-120	EXPERIENCE OF CHEMICAL TREATMENT FOR CONTROLLING CORROSION IN IDCT WATER OF KGS 3&4. V.Uday Kumar and B.S.Sahu
AWC-122	ELECTROCHEMICAL PASSIVATION STUDIES OF ZIRCALOY IN PRESENCE OF METAL ION Sinu Chandran, H. Subramanian, N. Sreevidya, S. Rangarajan and S. Velmurugan
AWC-123	OXIDATION/CORROSION COMPATIBILITY STUDIES OF P91 AND RAFM STEELS BY ELECTROCHEMICAL TECHNIQUES N Sreevidya, Sinu Chandran, C.R. Das, S. K Albert, S Rangarajan and S Velmurugan
AWC-124	PERFORMANCE RESTORATION TECHNIQUE DEVELOPED FOR FOULED HEAT EXCHANGER Dipankar Nanda, Babloo Tiwari and R. M. Pandey
AWC-125	NITROGEN COMPOUNDS FORMATION IN N_2 -WATER AND N_2 -MOISTURE SYSTEMS G.R. Dey and T.N. Das
AWC-126	EVALUATION OF ALUMINUM BRASS COUPONS IN BWR CONDENSATE ENVIRONMENT IN PRESENCE OF METAL K K Bairwa, V S Tripathi, A Kumar and D B NaiK

Poster	Session
UID	Title and Authors
AWC-127	SYNTHESIS AND CHARACTERIZATION OF V(HCOO) ₂ •2H ₂ O V S Tripathi K K Bairwa1, S N Achary and D B. NaiK
AWC-129	STUDIES ON FAILURE ANALYSIS OF STAINLESS STEEL ION EXCHANGE HOPPER AT NAPS S.K.Upadhyay, Ranjana Kusari, and Brij Mohan
AWC-131	ANTIMONY (Sb) SORPTION AT HIGH TEMPERATURE AND PRESSURE ON ZIRCALOY, CARBON STEEL (CS) AND MAGNETITE COATED CS (MCS) SURFACES S. J. Keny, B. K. Gokhale, A. G. Kumbhar, Santanu Bera, Saibal Basu and S. Velmurugan
AWC-132	EFFECT OF ANTIMONY(III) ON CARBON STEEL CORROSION INHIBITION BY MOLYBDATE IN CITRIC ACID SOLUTION Vinit K. Mittal, Y. Raghavendra, Santanu Bera, S. Sumathi, S. Rangarajan, S.V. Narasimhan and S.Velmurugan
AWC-134	RADIOACTIVE LIQUID WASTE DISCHARGE REDUCTION STRATEGIES AT TAPS 1&2 Deepa Papachan, A.K.Panda, S.M.Maskey, M.Joshi, and V.S.Daniel
AWC-135	EVALUATION OF ADVANCED HOT CONDITIONING PROCESS FOR PHWRS P.Chandramohan, M.P.Srinivasan and S.Velmurugan
AWC-137	TREATMENT OF FAST REACTOR LIQUID WASTE- ELECTROCHEMICAL METHOD Swapan Kumar Mahato, R. Sudha, P. Muralidaran and S. Anthonysamy
AWC-138	FIXATION OF NUCLEAR WASTE INTO GLASS MATRICES FOR ULTIMATE DISPOSAL G. Hazra, T Das and P. Mitra
AWC-139	ANTIMONY SORPTION PROPERTIES OF CHITOSAN – NANO TIO ₂ COMPOSITE BEADS Padala Abdul Nishad, B. Anupkumar and S. Velmurugan
AWC-141	HEAVY METALS-BIOREMEDIATION BY HIGHLY RADIORESISTANT DEINOCOCCUS RADIODURANS BIOFILM: PROSPECTIVE USE IN NUCLEAR REACTOR DECONTAMINATION Sudhir K. Shukla and T. Subba Rao
AWC-142	OPERATING CONDITIONS INFLUENCE CORROSION OF CARBON STEEL IN A FRESHWATER DISTRIBUTION SYSTEM T. Subba Rao
AWC-143	ISOLATION AND CHARACTERIZATION OF THE MICROBIAL COMMUNITY OF A FRESHWATER DISTRIBUTION SYSTEM P. Balamurugan and T. Subba Rao
AWC-144	MICROFOULING ASSESSMENT AND ITS CONTROL IN A HEAVY WATER PRODUCTION UNIT Rajesh Kumar and T. Subba Rao
AWC-145	CORROSION OF ALLOY D9 IN LIQUID SODIUM R. Sudha, K. Chandran, P. Muralidaran and S. Anthonysamy
AWC-146	THREE DECADES OF EXPERIENCE WITH COOLING WATER SYSTEM OF A FAST REACTOR A.Suriyanarayanan and B.S.Panigrahi
AWC-156	WATER TREATMENT WITH CHLORINE: INFLUENCE OF SOURCE WATER CHARACTERISTICS ON CHLORINATION & CBPS FORMATION R K Padhi, S Subramanian and K K Satpathy
AWC-158	ENTRAINMENT AND IMPINGEMENT OF AQUATIC FAUNA AT COOLING WATER SYSTEM OF MADRAS ATOMIC POWER STATION (MAPS) S. Barath Kumar, N. P. I. Das and K.K. Satpathy
AWC-159	SURFACE AND ELECTROCHEMICAL CHARACTERIZATION OF NANO ZINC FERRITE COATING ON CARBON STEEL Sumathi Suresh, S. Rangarajan and S velmurugan

Poster	Session
UID	Title and Authors
AWC-163	EVALUATION OF CORROSION INHIBITORS FOR HIGH TEMPERATURE DECONTAMINATION APPLICATIONS V. S. Sathyaseelan, A. L. Rufus and S. Velmurugan
AWC-171	DEVELOPMENT OF LEACHING METHOD FOR THE ANALYSIS OF PALLADIUM CATALYST USED IN THE MODERATOR COVER GAS CIRCUIT OF MAPS BY ICP-OES S.Vijayalakshmi and S.Annapoorani
AWC-172	DISSOLUTION OF COBALT METAL POWDER V.S.Sathyaseelan, A.L.Rufus and S.Velmurugan
AWC-174	STUDIES WITH ANTI FOULING COATING ON SEAWATER INTAKE SYSTEM SCREENS OF MAPS N.Sankar, V.S.Santhanam, P.Umapathi, K.Hari Krishna, D.Rajendran, P.S.Murthy and V.P. Venugopalan,
AWC-175	INFLUENCE OF GEOMETRY OF PIPE ON FLOW ACCELERATED CORROSION - A STUDY UNDER NEUTRAL PH CONDITION P.Madasamy, M.Mukunthan, P.Chandramohan, T.V.Krishna Mohan, and S.Velmurugan
AWC-176	EVALUATION OF PLASMA COATED CARBON STEEL TO RESIST FLOW ACCELERATED CORROSION P.Madasamy, J. Alphonsaa, J. Ghanshyam, S. Mukherjee, M.Mukunthan, P.Chandramohan, T.V.KrishnaMohan, E.Natarajan and S.Velmurugan
AWC-177	PREPARATION AND DISSOLUTION OF URANIUM DIBUTYL PHOSPHATE (U-DBP) M.K.Dhanesh, A.L.Rufus and S.Velmurugan
AWC-178	STUDIES ON GADOLINIUM PRECIPITATION IN MODERATOR SYSTEM OF NUCLEAR REACTOR Akhilesh C Joshi, Puspalata Rajesh, A.L.Rufus and S.Velmurugan
AWC-179	OBSERVATIONS ON THE REMOVAL OF GADOLINIUM FROM THE MODERATOR SYSTEM OF PRESSURISED HEAVY WATER REACTOR (PHWR) AND ADVANCED HEAVY WATER REACTOR (AHWR) V. Praveena, Padma S.Kumar, A.L.Rufus and S.Velmurugan
AWC-180	CHEMISTRY MANAGEMENT OF GENERATOR STATOR WATER SYSTEM N.Sankar, V.S.Santhanam, S.R.Ayyar, P.Umapathi, P.Jeena, K.Hari Krishna, D.Rajendran
AWC-181	STUDIES WITH SOLID CHLORINE CHEMICAL FOR CHLORINATION OF SEA WATER SYSTEMS
AWC-182	N.Sankar, P.Kumaraswamy, V.S.Santhanam, P.Jeena, K.Hari Krishna and D.Rajendran, CORROSION RATE OF CARBON STEEL IN NEUTRON SHIELD TANK WATER R.Ramakrishnan, N.Rathinasamy and K.V.Ravi
AWC-183	OPTIMUM THICKNESS EVALUATION OF ZrO ₂ COATING ON TYPE 304L STAINLESS STEEL FOR CORROSION PROTECTION Nidhi Garg, Santanu Bera, V. S. Tripathi, Vijay Karki and S. Velmurugan
AWC-184	IODINE REMOVAL IN CONTAINMENT FILTERED VENTING SYSTEM DURING NUCLEAR ACCIDENT SubrataBera, D. B. Nagrale, Anuj Kumar Deo, U. K. Paul, M. Prasad and A. J. Gaikwad
AWC-186	AN OPERATIONAL EXPERIENCE WITH COOLING TOWER WATER SYSTEM IN CHILLING PLANT Manju B Rajan, Ankan Roy and KV Ravi
AWC-187	CONTAINMENT BEHAVIOR DURING MOLTEN CORIUM CONCRETE INTERACTION Balbir Kumar Singh, S. P. Lakshmanan, S. Bera, P. K. Baburajan, R. S. Rao, U. K. Paul, A. K. Deo and A. J. Gaikwad
AWC-188	DEUTERISATION OF MIXED BED ION EXCHANGE RESIN: KINETICS STUDY Satinath Ghosh, M. K. Tripathy, Kajal Dhole, T. Vasudevan, Satyam Shukla and R. S. Sharma
AWC-189	FEASIBILITY STUDY ON NANO-STRUCTURED COATINGS TO MIGATE FLOW-ACCELERATED CORROSION OF CARBON STEEL PIPING SYSTEM Seunghyun Kim, Jeong Won Kim and Ji Hyun Kim

5. 次回開催

- Symposium on Water Chemistry and Corrosion in Nuclear Power in Asia-2017
- 2. 開催地:中国 遼寧省 瀋陽市 (Shenyang City)
- 3. 開催日:2017年9月
- 4. 主催:
 - 1 China Nuclear Energy Association (CNEA)
 - 2 Institute of Metal Research (IMR)
 - 3 Chinese Academy of Sciences (CAS)

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5. 次回開催

- Shenyangcity is located in the central part of Liaoning Province which is about 600 km northeast to Beijing.
- The largest city in Northeast China with population of about 8 millions.
- Shenyang is a celebrated old city with more than 2,000 years of history.



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NPC2016

- 1. NPC2016: 20th NPC International Conference
- 2. 会期:2016年10月2日(日)~7日(金)
- 3. 場所: The Brighton Dome, Brighton, UK
- 4. 主催: The Nuclear Institute
- 5. スケジュール:
 - ① Call for Abstracts issued: 2015年4月1日~
 - ② Deadline for Abstracts: 2015年12月1日