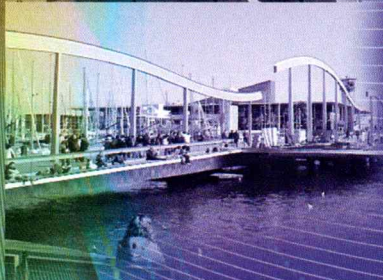
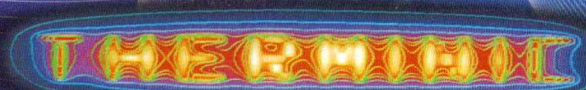


THA



International Workshop on THERMAL INvestigations of ICs and Systems Barcelona Spain 6-8 October 2010



General Chair >

BERNARD COURTOIS,
CMP, Grenoble, France

Vice General Chair >

MARTA RENCZ,
BUTE, Budapest, Hungary



The Workshop is sponsored by the IEEE
Components, Packaging, and Manufacturing
Technology Society and by CMP.

Wednesday 6 October 2010		Thursday 7 October 2010		Friday 8 October 2010	
08:00 09:00 Registration					
09:00 09:10 Welcome address Bernard COURTOIS (CMP, Grenoble, France)					
09:10 09:50 Invited speaker I: Microscale heat transfer in single- and two-phase flows: scaling, stability, transition Gian Piero CELATA (ENEA Institute of Thermal-Fluid Dynamics, Rome, Italy) Chair: Antonio RUBIO (UPC, Barcelona, Spain)		08:30 09:10 Invited speaker II: Microscale heat transfer techniques for heat sinks and compact heat exchangers Martine BAELEMAN (Katholieke Univ. Leuven, Belgium) Chair: Josep ALTET (UPC, Barcelona, Spain)			
09:50 10:10 Break					
10:10 11:50 Session 1.1 Temperature sensor and thermal data acquisition Chair: Herming CHIUH (National Chiao Tung U., Taiwan)		09:10 11:10 Session 2.1 Thermal and electrothermal simulation and modeling Chair: Ryusuke EGAWA (Tohoku U., Japan)		08:30 10:30 Session 3.1 Nanopack I Chair: Afshin ZIAEI (Thales Research & Technology, France)	
10:10 10:30 [16] Design of fluorescent spin-crossover nanoparticles for thermometry applications Carlos QUINTERO, Gábor MOLNÁR, Lionel SALMON, Alexey TOKAREV, Azzedine BOUSSEKSOU (Laboratoire de Chimie de Coordination, Toulouse, France), Christian BERGAUD (LAAS CNRS, Toulouse, France)		09:10 09:30 [01] Electro-thermal characterization and simulation of integrated multi-trenched Xtreme Power Devices Joseph RHAYEM, B. DESOETE, R. GILLON, A. WIEERS, M. TACK (ON Semiconductor Belgium BVBA, Oudenaarde, Belgium), B. BESBES (U. Paris-Est Marne-la-Vallée, France), R. BLECIE (U. of Zagreb, Zagreb, Croatia), S. BYCHIKHIN, G. HABERFEHLNER, D. POGANY (Vienna University of Technology, Vienna, Austria)		08:30 08:50 [32] Major achievements of the NANOPACK project Sebastien DEMOUSTIER, Afshin ZIAEI (Thales Research & Technology, Palaiseau, France)	
10:30 10:50 [13] IOTA: towards an integrated on-chip thermocouple array Jieyi LONG, Andrea Grace KLOCK, Chuanle ZHOU, Seda Ogrenci MEMIK, Matthew GRAYSON (Northwestern Univ. Evanston, USA)		09:30 09:50 [11] Development and experiment verification of an electro-thermal simulator for the metal interconnection in single-layer PCB Yabin ZHANG, Paolo Emilio BAGNOLI (U. of Pisa, Italy)		08:50 09:10 [22] Performance of thermal interface materials: Numerical analysis Javier GOICOECHEA (IBM Zurich Research Lab, Switzerland)	
10:50 11:10 [27] Thermal modeling and measurements of AlGaN/GaN HEMTs including thermal boundary resistance Raphael SOMMET, Raymond QUERE (XLIM U. Limoges, France), Guillaume MOUGINOT, Zineb OUARCH, Sylvain HECKMANN (United Monolithic Semiconductors (UMS), Orsay, France)		09:50 10:10 [21] Nonlinear electro-thermal OLED model in SUNRED field simulator László POHL, Ernő KOLLÁR, András POPPE (Budapest U. of Technology and Economics, Hungary)		09:10 09:30 [33] Influences of technological processing and surface finishes on thermal behaviour of thermal interface materials Mohamad ABO RAS (Berliner Nanotest und Design GmbH, Germany), Bernhard WUNDERLE (TU Chemnitz, Germany), Jörg BAUER (FhG IZM, Germany), Ralph SCHACHT (U. of Applied Sciences Lausitz, Senftenberg, Germany), Hermann OPPERMAN (FhG IZM, Germany), Bernd MICHEL (FhG IZM, Germany)	
11:10 11:30 [46] Diagnostics of LED-based streetlighting luminaires by means of thermal transient method Gábor MAROSY, Zoltán KOVÁCS, András POPPE (Budapest U. of Technology and Economics, Hungary)		10:10 10:30 [38] Electro-thermal coupling analysis methodology for RF circuits Didac GÓMEZ, Diego MATEO, Josep ALTET (UPC, Barcelona, Spain)		09:30 09:50 [43] Transient TIM measurements for in-situ thermal characterization of microprocessors Gábor FARKAS (Mentor Graphics, Hungary), Csaba BARNÁ (8-MIX Studio, Hungary)	
11:30 11:50 [36] Crosstalk compensation in thermal transient measurements Péter SZABÓ, Vladimír SZÉKELY (Budapest U. of Technology and Economics, Hungary)		10:30 10:50 [59] Innovative methodology to extract dynamic compact thermal models: application to power devices Toufik AZOUI, Patrick TOUNSI, Jean-Marie DORKEL (CNRS-LAAS, Toulouse, France)		09:50 10:10 [47] Re-design and validation of the 'STATIM' TIM tester Vladimír SZÉKELY, Andras VASS-VARNAL, Ernő KOLLÁR (Budapest U. of Technology and Economics, Hungary)	
11:50 12:44 Poster session* Posters are introduced by one slide in maximum 3 minutes each. Chair: Marta RENCZ (Budapest U. of Technology and Economics, Hungary)		10:50 11:10 [60] Heat transfer enhancement in high-power heat sinks using active reed technology Pablo HIDALGO, Florian HERRAULT, Mark ALLEN, Ari GLEZER (Georgia Institute of Technology, Atlanta, USA) Scott KASLUSKY, Brian ST. ROCK (United Technologies Research Center, East Hartford, USA)		10:10 10:30 [48] In-situ characterization of thermal interface materials Andras VASS-VARNAL, Zoltán SÁRKÁNY, Marta RENCZ (Budapest U. of Technology and Economics, Hungary)	
12:45 14:15 Lunch		11:10 11:30 Break		10:30 10:50 Break	
14:15 15:35 Session 1.2 Thermal modelling and investigation of packages Chair: Thomas ZAHNER (OSRAM, Germany)		11:30 12:24 Poster viewing		10:50 13:10 Session 3.2 Nanopack II Chair: Bernhard WUNDERLE (IZM, Germany)	
14:15 14:35 [06] Impact of PCB coupled via and micro-via structures on component performances Eric MONIER-VINARD, Michel BRIZOUX, Wilson MAIA, Valentin BISSUEL, Arnaud GRIVON (Thales Corporate Services, France)		12:30 14:00 Lunch		10:50 11:30 Invited talk Nanointerface I: Nanopack John JANSSEN (NXP Semiconductors, Nijmegen, The Netherlands)	
14:35 14:55 [49] Thermal characterization of SOI CMOS Micro Hot-plate Gas sensors Ibraheem HANEEF (Air U.), Syed ALI, Florin UDREA (U. of Cambridge, UK), Mihai BURZO, Pavel KOMAROV, Peter RAAD (Southern Methodist U., USA)		14:00 15:20 Session 2.2 THERMINATOR I Chair: Alberto MACII (Politecnico di Torino, Italy)		11:30 11:50 [03] Simultaneous topographic and thermal imaging of silicon nanowires using a new STM probe Etienne PUYOO (Université Bordeaux 1/CEA, Grenoble France), Stephane GRAUBY, Jean-Michel RAMPNOUX, Wilfrid CLAEYS, Stefan DILHAIRE (Université Bordeaux 1, France), Emmanuelle ROUVIERE (CEA, Grenoble, France)	
14:55 15:15 [53] Compact transient thermal model for 3D ICs with liquid cooling via enhanced heat transfer cavity geometries Arvind SRIDHAR, Alessandro VINCENZI, Martino RUGGIERO (EPFL, Switzerland), David ATIENZA, Thomas BRUNSCHWILER (IBM Zurich, Switzerland)		14:00 14:20 [65] THERMINATOR: Modeling, control and management of thermal effects in electronic circuits of the future Andrea CALIMERA, Alberto MACII, Enrico MACII, Massimo PONCINO (Politecnico di Torino, Italy), Salvatore RINAUDO (STMicroelectronics, Italy)		11:50 12:10 [45] Thermal interfaces based on vertically aligned carbon nanotubes: An analysis of the different contributions to the overall thermal resistance Hung LE KHANH, Laurent DIVAY, Pierre LE BARNY, Elodie LEVEUGLE, Sebastien DEMOUSTIER (Thales Research & Technology, Palaiseau, France), Hung LE KHANH, Jinbo BAI (Ecole Centrale Paris, France)	
15:15 15:35 [56] A numerical model of an inter-strata liquid cooling solution for a 3D IC architecture Daniel KEARNEY, Thierry HILT, Pascale PHAM (CEA, Minatec-Leti, France)		14:20 14:40 [64] 2D Thermal propagation analysis of discrete power devices based on an innovative distributed model technique and CAD framework Giuseppe GRECO, Salvatore RINAUDO, Gaetano BAZZANO, Daniela Grazia CAVALLARO (STMicroelectronics, Catania, Italy)		12:10 12:30 [62] Thermal interface materials based on carbon nanotubes and its thermal characterization by means of differing methods Maria KASIMIR, Katayoun GHARAGOZLOO-HUBMANN, Svitlana TROTSSENKO, Gregor J.F. CZEMPIEL, Vitaliy DATSYUK, Stephanie REICH (Freie U., Berlin, Germany)	
15:35 15:55 Break		14:40 15:00 [34] Electro-thermal co-simulation of ICs with runtime back-annotation capability András TIMÁR, George BOGNAR, András POPPE, Marta RENCZ (Budapest U. of Technology and Economics, Hungary)		12:30 12:50 [63] Effect of phonon confinement on heat dissipation in ridges Pierre-Olivier CHAPUIS, Lars SCHNEIDER, Clivia M. SOTOMAYOR TORRES (Institut Català de Nanotecnologia (ICN), Bellaterra, Spain) Mika PRUNNILA, Andrey SHCHEPETOV, Sampo LAAKSO, Jouni AHOPELTO (VTT Microelectronics, Espoo, Finland)	
		15:00 15:20 [37] Minimizing temperature sensitivity of dual-Vt CMOS circuits using simulated-annealing on ISING-like models Marco CALDERA, Andrea CALIMERA, Alberto MACII, Enrico MACII, Massimo PONCINO (Politecnico di Torino, Italy)		12:50 13:10 [24] A Flexible device for the measurement of the thermal properties of small (µL) volumes Joe AHTERTON, Mark ROSAMOND, Sherri JOHNSTONE, Dagou ZEZE (Durham U., UK)	
		15:20 15:40 Break		13:10 14:40 Lunch	

15:55 17:15 Session 1.3 Reliability and advanced measurement techniques Chair: Vadim TSOI (Huawei Techno, Kista, Sweden)			15:40 17:00 Session 2.3 THERMINATOR II Chair: Alberto MACII (Politecnico di Torino, Italy)			14:40 16:00 Session 3.3 Advanced cooling techniques Chair: Bruno MICHEL (IBM Zurich, Switzerland)		
15:55	16:15	[12] Hot spot detection in integrated circuits laterally accessing to their substrate using a probe laser beam Xavier PERPIÑA, Xavier JORDA, Miquel VELLVEHI, (IMB-CNM (CSIC), Bellaterra, Spain), Josep ALTET (UPC, Barcelona, Spain)	15:40	16:00	[50] A system-level thermal analysis and thermal-aware floorplanning for system on programmable chip (SoPC) Krishna M. VISWANATH, D.S. HARISH RAM (Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Tamilnadu, India)	14:40	15:00	[23] Two-phase flow boiling of R134a in a multi-microchannel heat sink for microprocessor cooling Yassir MADHOUR, Jonathan OLIVIER, Etienne COSTA-PATRY, John Richard THOME (Swiss Federal Institute of Technology, Lausanne (EPFL), Yassir MADHOUR, Stephan PAREDES, Bruno MICHEL, (IBM Zurich, Rueschlikon,
16:15	16:35	[31] Improved infrared thermal imaging of a CMOS MEMS device Richard H. HOPPER, Christopher H. OXLEY, (De Montfort U., Leicester, UK) Ibraheem HANEEF, Syed Zeeshan ALI, Florin UDREA, (U. of Cambridge, UK) Ibraheem HANEEF (Air U., Islamabad,	16:00	16:20	[51] Experimental characterization and model validation of thermal hot spot dissipation in 3D stacked ICs Herman OPRINS, Vladimir CHERMAN, Miroslav CUPAK (IMEC, Belgium), , Bart VANDEVELDE, Adi SRINIVASAN, Edmund CHENG (Gradient Design Automation, Santa Clara, USA)	15:00	15:20	[39] Pin-shape assessment for interlayer cooled chip stacks with periodic boundary condition modeling Gözde TÖRAL (LSM / EPFL, Switzerland), Roland BENDER (ANSYS, Otterfing, Germany), Yusuf LEBLEBICI (EPFL, Switzerland), Thomas BRUNSCHWILER (IBM Zurich, Switzerland)
16:35	16:55	[40] Thermal impedance of AC LEDs András POPPE, Tamás TEMESVÖLGYI (Budapest U. of Technology and Economics, Hungary), Gábor FARKAS, Balázs KATONA (Mentor Graphics, Hungary)	16:20	16:40	[57] Thermo-sensitive snapback behavior model intended to be included in power MOSFET for electro-thermal simulation Hussein DIA (LAAS CNRS, Toulouse, France)	15:20	15:40	[04] Hot-spot self-cooling effects on two-phase flow of R245fa in 85µm-wide multi-microchannels Etienne COSTA-PATRY, Jonathan OLIVIER, John Richard THOME, (Swiss Federal Institute of Technology, Lausanne (EPFL), Stephan PAREDES, (IBM Zurich, Rueschlikon, Switzerland)
16:55	17:15	[55] The problem of infinitely cascaded thermoelectric converters and their optimization York Christian GERSTENMAIER (Siemens AG, Germany)	16:40	17:00	[58] Thermo-sensitive snapback behavior model intended for electro-thermal simulation of power MOSFETs Hussein DIA (LAAS CNRS, Toulouse, France)	15:40	16:00	[35] Development of vertical superlattices in silicon for on-chip thermal management Jayalakshmi PARASURAMAN, Dan ANGELESCU, Philippe BASSET, Tarik BOURQUINA (ESIEE, Paris, France), Patrice CHANTRENNE, Mathieu BARDOUX (INSA-Lyon, France),
						16:00	16:10	Closing remarks Bernard COURTOIS (CMP, Grenoble, France)
17:15 18:20 Poster viewing			17:00 Free time					
			19:00 Social event					
*Posters session								
11:50	11:53	[07] Mathematical and computing modeling of temperature fields in electronic modules Peter KANDALOV, Alexander G. MADERA (SRISS RAS, Moscow, Russia)	12:26	12:29	[28] Investigation of tier-swapping to improve the thermal profile of memory-on-logic 3D ICs Samson MELAMED, Thorlindur THOROLFSSON, Paul FRANZON, W. Rhett DAVIS, (NCSU, USA, Raleigh, USA), Adi SRINIVASAN (Gradient Design Automation), Edmund CHENG (Gradient Design Automation, Santa Clara, USA)			
11:53	11:56	[08] Miniaturized black body radiator for IR-detector calibration – Design and development Ralph SCHACHT, Daniel MAY, Bernd MICHEL (FHG IZM, Germany), Torsten NOWAK, Christopher GERNER (U. of Applied Sciences Lausitz, Germany), Bernhard WUNDERLE (TU Chemnitz, Germany)	12:29	12:32	[41] How do we know if the structure function is correct? Albin SZALAI, Vladimír SZÉKELY (Budapest U. of Technology and Economics, Hungary)			
11:56	11:59	[09] Reliability evaluation for specify factor of fatigue on power device Masahiro KOBAYASHI (Yokohama U., Japan)	12:32	12:35	[52] Power-thermal analysis of multimedia applications Marius MARCU (Politehnica U. of Timisoara, Romania)			
11:59	12:02	[10] The new approach to modeling of the temperature response in BDM regime Mateusz KOSIKOWSKI, Zbigniew SUSZYNSKI (TU. of Koszalin, Poland)	12:35	12:38	[54] High-power test device for package thermal assessment and validation of thermal measurement techniques Xavier JORDA, Xavier PERPIÑA, Miquel VELLVEHI (IMB-CNM, Bellaterra, Spain), Francesc MADRID (ICE (IEEC-CSIC), Bellaterra, Spain), Josep ALTET (UPC, Barcelona, Spain)			
12:02	12:05	[14] Method and measurement setup for detection of the shape of optical power pulse in active thermography Zbigniew SUSZYNSKI (TU. of Koszalin, Poland), Michal BEDNAREK (The Main School of Fire Service, Warsaw, Poland)	12:38	12:41	[61] Optimized fan tray for cooling of civil radar application Fabien GOLDSPIEGEL, Hubert POLAERT (Thales Air Systems, Boos, France)			
12:05	12:08	[15] High heat flux heat sink with adaptable distribution of the heat extraction capacity Jerome BARRAU, Joan ROSELL, Manel IBÁÑEZ (U. of Lleida, Spain), Lounes TADRIST (IUSTI, Marseille, France)						
12:08	12:11	[17] The current-voltage characteristics of SiC Schottky barrier diodes with the self-heating included. Włodzimierz JANKE, Aneta HAPKA (TU. of Koszalin, Poland)						
12:11	12:14	[18] Novel method for the assessment of thermal properties of high power thyristor structure using photoacoustic technique with composite excitation signal Radoslaw DUER, Zbigniew SUSZYNSKI (TU. of Koszalin, Poland)						
12:14	12:17	[19] Direct electro-thermal simulation of integrated circuits using standard CAD tools Jean-Christophe KRENCKER, Jean-Baptiste KAMMERER, Luc HÉBRARD, Yannick HERVÉ (InESS, Strasbourg, France)						
12:17	12:20	[20] Photoacoustic method of determination of the quantum efficiency of luminescence in Mn2+ ions in Zn(1-x-y)Be(x)Mn(y)Se crystals Mirosław MALINSKI, Łukasz CHROBAK (TU. of Koszalin, Poland), Jacek ZAKRZEWSKI, Karol STRZALKOWSKI (U. Mikolaja Kopernika w Toruniu, Poland)						
12:20	12:23	[25] Electro-thermal simulations to improve heater design in preconcentration membranes Roser INGLES, Jordi PALLARES, Jose Luis RAMIREZ (U. Rovira i Virgili, Tarragona, Spain), Isabel GRACIA (CNM-CSIC, Bellaterra, Spain), Anne Marie GUE (LAAS CNRS,						
12:23	12:26	[26] Heat transfer optimization of a micro solid-oxide fuel cell stack Marc SALLERAS (IMB-CNM CSIC, Bellaterra, Spain)						