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The 13th Korean MEMS Conference

제13회 한국 MEMS 학술대회

2011. 4. 7(목) ~ 9(토) | 제주 KAL호텔

| 주 관 | 한국 MEMS 학술대회 운영위원회

| 공동주최 | 대한전기학회(KIEE) MEMS 연구회
한국센서학회(KSS) MEMS 연구회
대한기계학회(KSME) 마이크로/나노공학부문
한국정밀공학회(KSPE) 나노마이크로부문
MEMS 기술연구조합

UNESCO 세계자연유산 '성산일출봉'

| 후 원 | ㈜케이원솔루션, ㈜센소닉, ㈜우원테크놀러지, ㈜플리어시스템코리아, ㈜나노엔텍, 지앤피테크놀로자㈜, ㈜신우엠에스티, ㈜성원모밍, ㈜알트소프트, MEMS기술연구조합, 바이오공학연구소, 한국전자통신연구원, KIST 한국기술벤처재단 Micro/Nano Fab. 센터, 성균관대학교 지역혁신센터, ㈜셀로코, ㈜넥스트론, 서울대학교 한국Bio-IT파운더리 서울센터, 나노IT부품기술산업화지원센터, 나노전광주식회사, 인체에너지변환융합파이오니어연구단, 나노융합산업연구조합, 마이다스시스템(주)

제13회 한국 MEMS 학술 대회 일정

날 짜	시 간	내 용	장 소
4월 7일 목요일	16:00~18:00	등 록	로비 (그랜드볼룸 앞)
	17:30~19:00	리셉션	로비 (그랜드볼룸 앞)
4월 8일 금요일	07:30~18:00	등 록	로비 (그랜드볼룸 앞)
	08:00~09:20	구두 발표 FO-1 (Optical and RF MEMS)	그랜드볼룸 좌장 : 김경천, 권성훈
	09:20~09:30	휴 식	
	09:30~09:40	개회식	그랜드볼룸
	09:40~10:20	초청강연 (Invited talk) Xinxin Li (Chinese Academy of Sciences)	그랜드볼룸 좌장 : 최범규, 최두선
	10:20~11:30	포스터 발표 FP-1 (Bio/Biomimetics, Micro Fluidics)	무궁화룸,로즈룸,동백룸 좌장 : 이성호, 앙 성
	11:30~12:00	초청강연 (Invited talk) 장준근 CEO (나노엔텍)	그랜드볼룸 좌장 : 이승기, 장원익
	12:00~13:20	중 식	
	13:20~14:40	구두 발표 FO-2 (Bio/Biomimetics)	그랜드볼룸 좌장 : 강지윤, 김정무
	14:40~15:00	휴 식	
	15:00~15:30	초청강연 (Invited talk) 김동표 (충남대학교)	그랜드볼룸 좌장 : 최창억, 고종수
	15:30~16:50	구두발표 FO-3 (Power MEMS/ENERGY, Nano/Micro Materials and Fabrication Technology)	그랜드볼룸 좌장 : 김종백, 윤광석
	16:50~18:00	포스터 발표 FP-2 (Optical and RF MEMS, Nano/Micro Materials and Fabrication Technology)	무궁화룸,로즈룸,동백룸 좌장 : 박재형, 김준원
	18:30~20:30	만 찬	그랜드볼룸
4월 9일 토요일	07:30~12:00	등 록	로비 (그랜드볼룸앞)
	08:00~09:20	구두발표 SO-4 (Micro Sensors)	그랜드볼룸 좌장 : 박세일, 윤준보
	09:20~10:30	포스터 SP-3 (Micro Sensors, Power MEMS and Energy, Miscellaneous)	무궁화룸,로즈룸,동백룸 좌장 : 이상호, 조일주
	10:30~11:50	구두발표 SO-5 (Microfluidics, Miscellaneous)	그랜드볼룸 좌장 : 공성호, 박상후
	11:50~12:00	우수논문 시상 및 폐회	그랜드볼룸

Fuel cell, Thruster, Power transmission

SP-3-44 NaBH4 수소발생기가 통합된 마이크로 연료전지 시스템의 제작 및 성능평가 377
[1]김태규*, [2]이종광
[1]조선대학교, [2]삼성전자

A fully-integrated micro fuel cell system with NaBH4 hydrogen generator was developed for micro power sources. The micro fuel cell system consists of two main components; one is a micro PEM fuel cell and the other is a microreactor for hydrogen generation from NaBH4 alkaline solution. All of BOP such as a fuel cartridge, a micro-pump, and an auxiliary battery were integrated for a complete micro power device, and the performance of the micro fuel cell system was measured.

SP-3-45 마이크로 유체 연료전지의 성능 향상을 위한 연구 379
[1]김희봉, [1]허승모, [1]한병욱, [1]안유민*
[1]한양대학교 기계공학과

Microfluidic fuel cells are defined a group of fuel cells capable of operation within the framework of a microfluidic chip. This type of fuel cell operates without a physical barrier.

In this study, we propose the microfluidic fuel cell integrated groove shape electrodes for improvement of the power density. The microfluidic fuel cell, composed of polydimethylsiloxane (PDMS) layer over a Pyrex glass substrate that contains a platinum groove shape electrodes, was designed and fabricated. Experiments were performed with two cases of fuel and oxidant. In the first case, hydrogen peroxide was employed both as fuel and oxidant and dissolved in dilute sodium hydroxide and sulfuric acid solutions, respectively. In the second case, formic acid and potassium permanganate were employed as fuel and oxidant, respectively and dissolved in dilute sodium hydroxide. The maximum power density of groove shape electrode fuel cell is higher than flat electrode fuel cell.

SP-3-46 MEMS methods for studying postbuckling beam under thermal loading and its application in electrothermal actuators 381
[1] YingMei Zheng, [1,2] LianSheng Ma, [1]Xing Chen and and [1]Dong-Weon Lee*
[1] MEMS & Nanotechnology Laboratory, School of Mechanical Systems Engineering, Chonnam National University, Gwangju, Republic of Korea
[2] School of Science, Lanzhou University of Technology, Lanzhou, People's Republic of China University

In our research, a coupling work between newly emerging MEMS methods with conventional solid mechanics are studied. Two targets are included in this work. Firstly, we firstly propose to open up a new application to MEMS that use the microfabricated structures and MEMS methods to investigate and prove the correctness for conventional solid mechanics theory, especially complex newly derived analytical equations by mechanics researchers, however, most of them are proved by any experimental results and some constant are unknown in equations that can be only obtained by experimentalresults [1]. The nonlinear equation is directly solved without any use of approximation and a closed-form solution for thermal postbuckling deformation is obtained as a function of the applied thermal load. Secondly, the MEMS methods proved numerical solution and analytical solution can work to support our design of new actuators with reliable design guide and accurate experimental expectations.

SP-3-47 소수성 표면으로 물위에 뜬 마이크로 증기선 383

[1]최주찬, [1]최영찬, [2]공성호*
[1]경북대학교 전자전기컴퓨터공학부, [2]경북대학교 IT대학 전자공학부

The floating micro steamboat with hydrophobic surface, which shows a fast moving speed and long lifetime, has been proposed. The velocity was in the range of 0.5 ~ 2 cm/s and maximum loading capability with device size of 10 x 10 mm2 was 0.4 g. The proposed micro steamboat operates without gas or fuel because it utilizes an electrically heated water steam.