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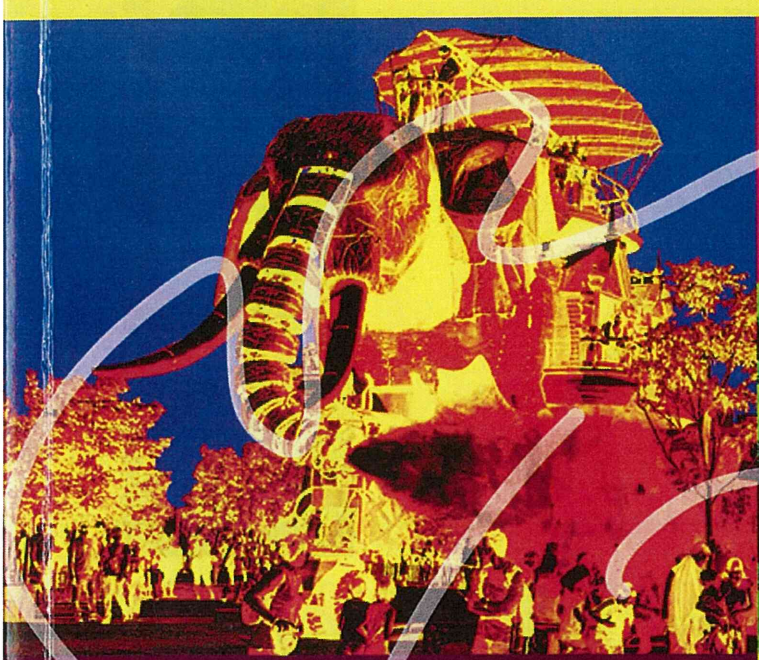

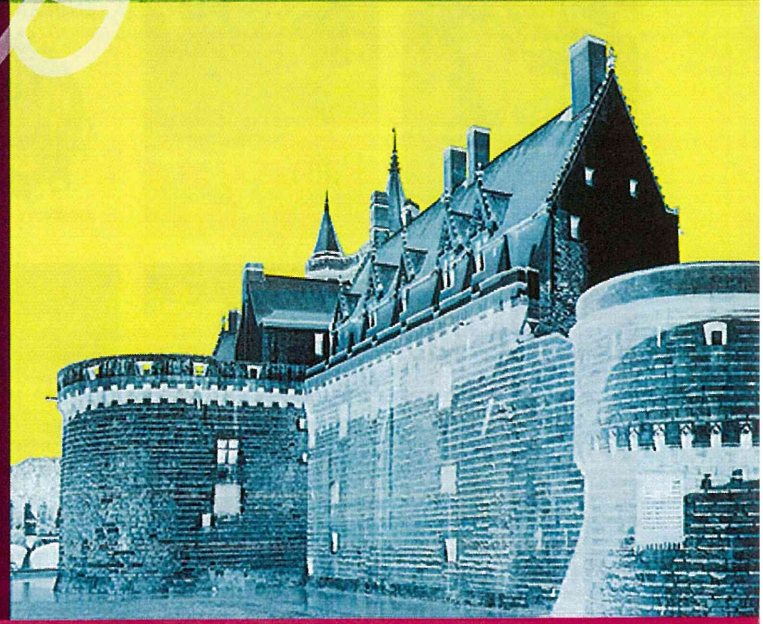

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P7 Biomaterials

P7.1

Biomaterial antibacterial efficiency with reduced level of porosity

Ingus Skadins[1], Juta Kroica[1], Ilze Salma[2], Aigars Reinis[1], Marina Sokolova[2], Natalija Berza[1]

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P7.2

Hydrogel Encapsulating Antibiotic in Osteomyelitis Prevention in Rats

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P7.3

Animal models of peri-prosthetic joint infection. Literature review and description of our model.

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P7.4

Bupivacaine-Loaded Injectable Calcium Phosphate Cement can reduce Postoperative Pain in iliac bone graft model dogs.

Borhane Fellah[1], Xavier Plaetevoet[1], Jean-Michel Bouler[2], Elise Verron[2], Pascal Janvier[2], Delphine Holopherne-Doran[1], Olivier Gauthier[1,2]

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P7.5

Efficacy of bone morphogenetic protein-2 immobilized on copolymer scaffolds: *in vitro* and *in vivo* evaluations

Salwa Suliman[1], Zhe Xing[1], Xujun Wu[2], Ying Xue[1], Torbjorn O. Pedersen[1], Joachim Nickel[3], Yang Sun[4], Anne Doskeland[5], Anne-Finne Wistrand[4], Kamal Mustafa[1]

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P7.6

Evaluation of biocompatibility of newly developed surgical threads made of PGA-co-PLA & PHB

Boguslawa Zywicka[1], Elżbieta Mielicka[2], Anna Pinar[2], Ewa Zaczynska[3], Anna Czarny[3], Agnieszka Walak[2], Izabela Krucinska[4], Danuta Ciechanska[5], Piotr Walak[6], Barbara Uminska-Wasiluk[6], Izabela Oleksiewicz[2]

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P7.7

Effects of high molecular weight hyaluronan for joint capsule in a rat immobilized knee model

Kenji Kanazawa[1], Yoshihiro Hagiwara[1], Masahiro Tsuchiya[2], Yutaka Yabe[1], Kazuaki Sonofuchi[1], Masashi Koide[1], Akira Ando[1], Yoshifumi Saijo[3], Eiji Itoi[1]

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P7.8

Comparison of intraarticular reactions to Multi Walled Carbon Nanotubes(MWCNTs) by injection at once with three divided times.

Hiroki Nomura, Hisao Haniu, Misako Yamada, Yuki Usui, Hiroyuki Kato, Naoto Saito

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P7.9

Evaluation of peripheral nerve regeneration with Diffusion Tensor Imaging (DTI); in vivo rabbit study.

Tetsuro Yamasaki[1], Ryo Oda[1], Hiroyoshi Fujiwara[1], Shigeki Hayashi[1], Tsuyoshi Sukenari[1], Yusuke Hara[1], Shinsuke Morisaki[1], Kazuya Ikoma[1], Kei Yamada[2], Mitsuhiro Kawata[3], Toshikazu Kubo[0]

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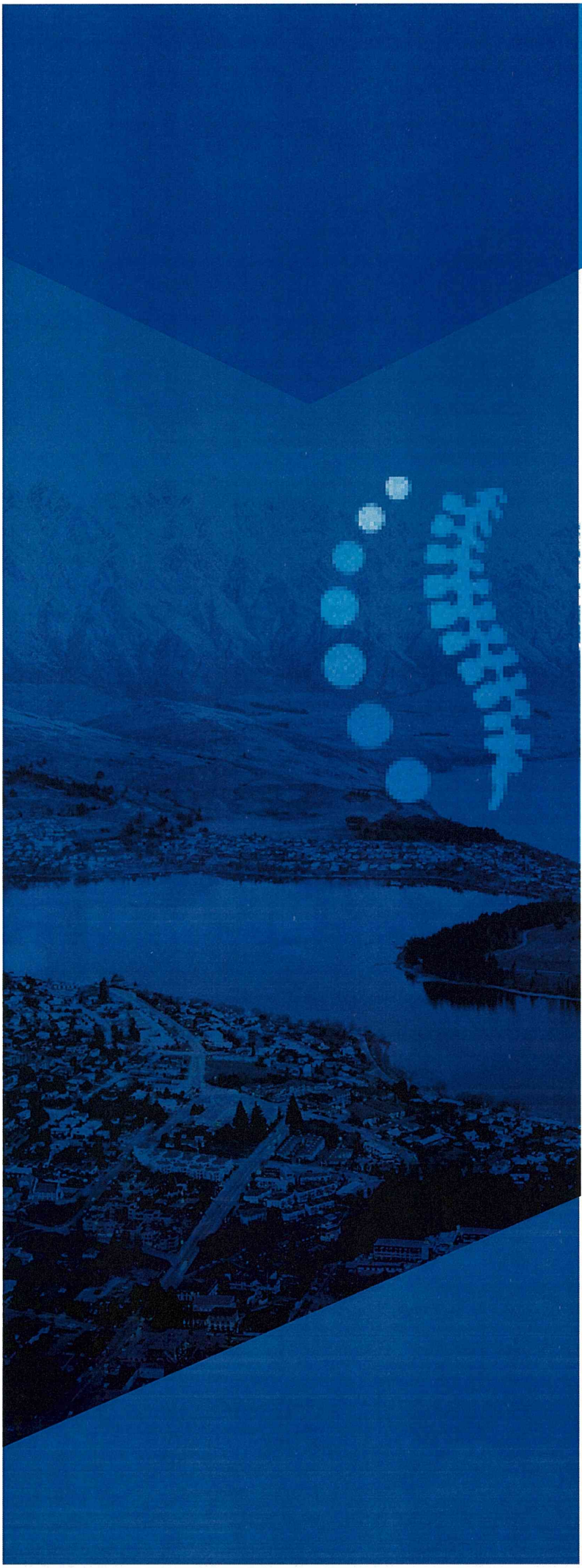

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control group. Studies with primary human osteoblast cultures confirmed the bioactivity of these scaffolds, and the in vivo regeneration of segmental critical size bone defects in a rabbit model demonstrated that this material induces new bone defect bridging, with clear evidence of regeneration of original radial architecture and bone marrow environment.

P66
Effects for osteosarcoma cells by carbon nanotubes

Kaoru Aoki[1], Masanori Okamoto[1], Shinsuke Kobayashi[1], Hiroki Nomura[1], Manabu Tanaka[1], Hiroyuki Kato[1], Yuki Usui[2], Hisao Haniu[3], Naoto Saito[3]
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Sarcomas such as osteosarcoma are treated with surgery and chemotherapy by anticancer drugs. The anticancer drugs cause various severe side effects, and prospective enough effects may not be obtained. So-called nano-particles smaller than cells have a property to enter cells and they are expected as drug delivery system (DDS). We heretofore reported biocompatibility and safety of the carbon nanotubes (CNT). We report potential as DDS for chemotherapy to osteosarcoma cells with CNTs.

The 143B cells (human osteosarcoma cell line) were seeded at 5.0×10^5 cells/10cm culture plate. After 24 hours, the culture medium was renewed to the medium contained 1 μg/ml or 10 μg/ml multi-walled CNT (MWCNT). Doxorubicin hydrochloride (DOX) (0.1μM, 1.0μM, 5.0μM) was used as positive control. Each group was n=3. After more 24 hours, we observed the cells with light microscope and counted the number of 143B cells of each plate.

In the light microscope images of the 143B cells that we added MWCNTs before 24 hours, the MWCNTs were taken in the cells. In the MWCNT 10 μg/ml group, much MWCNTs were taken in the 143B cells than the MWCNT 1 μg/ml group. The cell number after 24 hours culture was 23.3×10^5 cells/plate in control, 10.3×10^5 cells/plate in DOX 0.1 μM group, 5.6×10^5 cells/plate in 1.0 μM group, 2.8×10^5 cells/plate in 5.0 μM group, 21.3×10^5 cells/plate MWCNT 1 μg/ml group and 16.3×10^5 cells/plate MWCNT 10 μg/ml group.

When the MWCNTs are added to the osteosarcoma cell line; 143B cells, the MWCNTs are taken into the cells and inhibited a cellular proliferation in concentration-dependency. By adhering anticancer drugs to the MWCNTs, we expect to improve invasive efficiency to sarcoma cells of the anticancer drugs, to enhance the chemotherapeutic effect and to reduce the chemotherapeutic side effects.

Disclosure: The authors declare no competing interests.

P67
Time-elapsed screw insertion into cancellous bone

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"Time-elapsed" or "image-guided failure" assessment of bone is a relatively new technique that uses sequential image acquisition to analyse trabecular bone mechanics under a given loading regime. To date, this procedure has been employed to analyse trabecular mechanics during uniaxial compression [1, 2], screw pull-out [3], and screw push-in tests [4]. Nazarian et al. (2004) validated the use of this method for the assessment of microstructural trabecular mechanics, demonstrating no difference in the macroscopic behaviour of cancellous bone specimens under continuous or step-wise loading conditions [2].

These methods have provided valuable insight into the failure mechanisms of bone under specific loading conditions. Work within our laboratory, however, has sought to better understand the interactions between bone and implant during


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Abstract #

#586 **Poster Board Number 445**
Lactoperoxidase-Mediated Degradation of Oxidized Single-Walled Carbon Nanotubes and Its Modulatory Effects on Airway Antibacterial Activity. K. Bhattacharya[1], R. El-Sayed[1], F. T. Andón[1], A. Fornara[2], H. Li[3], J. Gregory[1], K. Leifer[3], S. Dahlén[1], *A. Star*[4], and *B. Fadeel*[1]. [1]Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; [2]Unit for Chemistry, Materials and Surfaces, SP Technical Research Institute of Sweden, Royal Institute of Technology, Stockholm, Sweden; [3]Department of Engineering Sciences, Ångström Laboratory, Uppsala, Sweden; and [4]Department of Chemistry, University of Pittsburgh, Pittsburgh, PA.

#587 **Poster Board Number 446**
Effects of MWCNT and Nitrogen-Doped MWCNT in Lung Epithelial Cells. A. Mihalchik[1,2], *D. W. Porter*[2], *V. Castranova*[2], *S. Tsuruoka*[3], M. Endo[3], and *Y. Qian*[2]. [1]Pharmaceutical and Pharmacological Sciences, West Virginia University, Morgantown, WV; [2]Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown, WV; and [3]Research Center for Exotic Nanocarbons, Shinshu University, Nagano, Japan.

#588 **Poster Board Number 447**
Autophagy and Extracellular HMGB1 Are Mediators of Inflammasome Activity in Response to MWCNT Exposure. *F. Jessop*, *R. Biswas*, and *A. Holian*. Center for Environmental Health Sciences, University of Montana, Missoula, MT.

#589 **Poster Board Number 448**
Effects of SWCNT Fiber Length and Functionalization on ROS and Collagen Production. A. Manke[1], *T. A. Stueckle*[2], L. Wang[2], C. A. Dinu[3], and Y. Rojanasakul[1]. [1]Pharmaceutical Sciences, West Virginia University, Morgantown, WV; [2]NIOSH, Morgantown, WV; and [3]Chemical Engineering, West Virginia University, Morgantown, WV.

#590 **Poster Board Number 449**
Differential Gene Expression in SAEC and HMVEC Grown in Monoculture or Coculture and Exposed to MWCNT: Correlation with *In Vivo* Studies. *B. Talkington*[1], C. Dong[2], X. Zhao[2], J. Dymacek[2,3], *V. Castranova*[1], *Y. Qian*[1], and N. L. Guo[2]. [1]National Institute for Occupational Safety and Health, Morgantown, WV; [2]West Virginia University Mary Babb Randolph Cancer Center, Morgantown, WV; and [3]West Virginia University Lane Department of Computer Science and Electrical Engineering, Morgantown, WV.

#591 **Poster Board Number 450**
Determination of Stoichiometric ROS Degeneration and Relationship between Redox Potential and Bioavailability to Design Safe CNTs. *S. Tsuruoka*[1], H. Matsumoto[2], K. Takeuchi[3], K. Koyama[1], N. Saito[5], Y. Usui[1], S. Kobayashi[5], E. Akiba[4], *D. W. Porter*[6], *V. Castranova*[6], *F. R. Cassee*[7], and M. Endo[1,3]. [1]Research Center for Exotic Nanocarbons, Shinshu University, Nagano, Japan; [2]Tokyo Institute of Technology, Meguro, Tokyo, Japan; [3]Institute for Carbon Science & Technology, Shinshu University, Nagano, Japan; [4]Kuraray Living Co., Ltd., Osaka, Japan; [5]School of Health Science, Shinshu University, Matsumoto, Nagano, Japan; [6]NIOSH, Morgantown, WV; and [7]RIVM, Bilthoven, Netherlands.

Abstract #

#592 **Poster Board Number 451**
Development of Determination Method of Single-Walled Carbon Nanotubes in the Lung of Intratracheal-Instilled Rat. N. Shinohara[1,2], K. Uchino[2], *K. Fujita*[1,2], S. Endoh[2], J. Maru[2], and H. Kato[1,2]. [1]National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan; and [2]Technology Research Association for Single Wall Carbon Nanotubes (TASC), Tsukuba, Ibaraki, Japan.

#593 **Poster Board Number 452**
Acute Inhalation Toxicity of Graphene Oxide and 5-Day Repeated Inhalation Toxicity of Graphene. J. Kim[1], J. Shin[2], J. Hwang[2], J. Lee[2], T. Kim[1], *J. Lee*[1], Y. Kim[6], H. Lee[3], N. Song[4], K. Ahn[5], and *I. Yu*[1]. [1]Institute of Nanoproduct Safety Research, Hoseo University, Asan, Republic of Korea; [2]Occupational Lung Diseases Institute, KCOMWEL, Ansan, Republic of Korea; [3]Donga University, Busan, Republic of Korea; [4]KRISS, Daejeon, Republic of Korea; [5]Hanyang University, Ansan, Republic of Korea; and [6]Korea Ginseng Corporation, Daejeon, Republic of Korea.

#594 **Poster Board Number 453**
Modulation of Toll-Like Receptor Activity by Pristine Single-Walled Carbon Nanotubes with Distinct Chiral Enrichment. *X. Zheng*[1], N. Afrooz[2], *N. B. Saleh*[2], J. Bisesi[1], and *T. Sabo-Attwood*[1]. [1]University of Florida, Gainesville, FL; and [2]University of South Carolina, Columbia, SC.

#595 **Poster Board Number 454**
Carbon Nanotubes Effects on Primary Human Umbilical Vein Endothelial Cells (HUVEC) Cultures Morpholgogy and Expression of Endothelial Genes and Proteins Implicated in Fibrinolysis. Y. Rodríguez-Yáñez[1], B. Chavez-Munguia[2], B. Cisneros[3], R. López-Marure[4], S. K. González[5], and *A. Albores*[1]. [1]Toxicology, Cinvestav, Mexico City, Mexico; [2]Infectomics, Cinvestav, Mexico City, Mexico; [3]Genetics, Cinvestav, Mexico City, Mexico; [4]Cell Biology, Instituto Nacional de Cardiología Ignacio Chávez, Mexico City, Mexico; and [5]HG Ticomán, Mexico City, Mexico.

#596 **Poster Board Number 455**
Pulmonary Instillation of Multiwalled Carbon Nanotubes Increases Lung Permeability and Decreases Glycoprotein 130 Expression in the Lungs. *L. C. Thompson*[1], *R. J. Snyder*[3], B. S. Harrison[4], *J. M. Brown*[2], and *C. J. Wingard*[1]. [1]Physiology, East Carolina University, Greenville, NC; [2]Pharmacology & Toxicology, East Carolina University, Greenville, NC; [3]NanoHealth Program, National Institute of Environmental Health Sciences, NIH, Research Triangle Park, NC; and [4]Institute of Regenerative Medicine, Wake Forest University, Winston-Salem, NC.

#597 **Poster Board Number 456**
Correlation of Toxicity and Material Properties: Oral and Inhalation Exposure of 16 Surface-Functionalized Nanomaterials. R. Büsen[1], L. Ma-Hock[1], W. Wohlleben[3], S. Gröters[1], D. Geiger[2], *B. van Ravenzwaay*[1], and *R. Landsiedel*[1]. [1]Toxicology, BASF SE, Ludwigshafen/Rhein, Germany; [2]Product Safety, BASF SE, Ludwigshafen, Germany; and [3]Material physics, BASF SE, Ludwigshafen, Germany.

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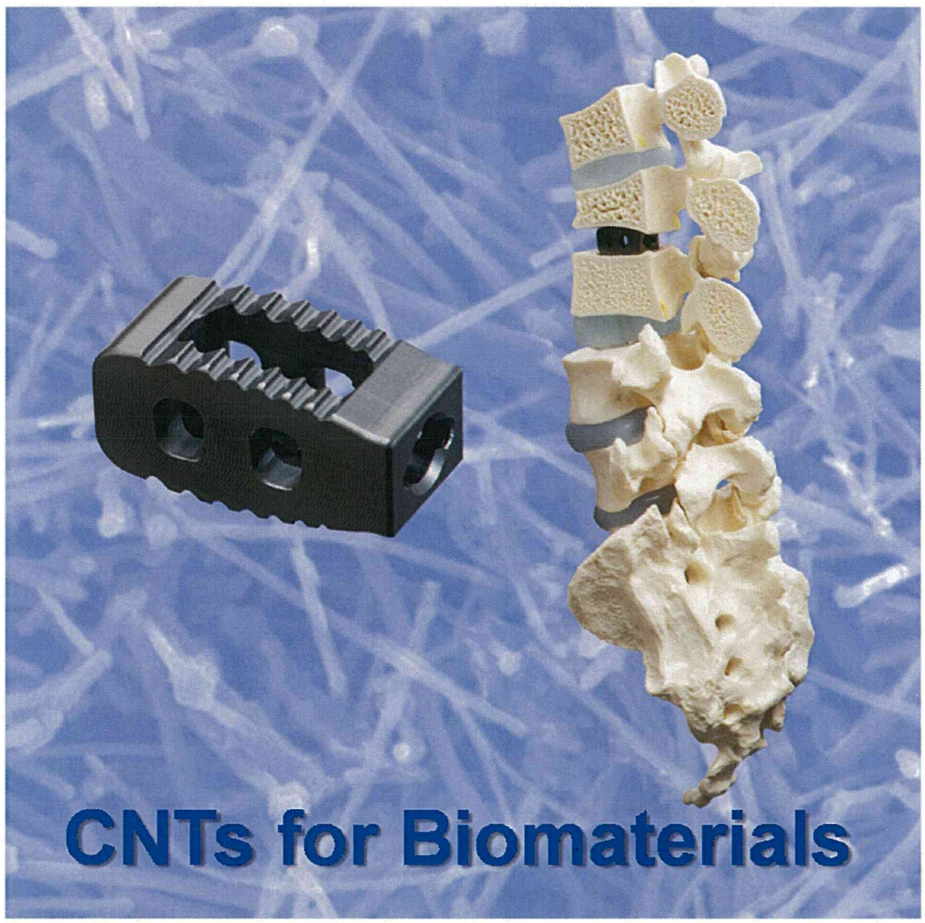

April 10, 2014

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