NANOMATRONIX, LLC

WWW.NANOMATRONIX.COM

CORE COMPETANCY

Nanomatronix uses nanotechnology, microelectronics, and biotechnology to provide solutions to the healthcare, energy, and defense industries.

Nanotechnology SBU: Carbon Nanotubes (CNTs), reduced Graphene Oxide (rGO), various ceramic nanostructures, polymer membranes, and nano-composites thereof

Microelectronics SBU: Monolithic and Hybrid Microcircuit Screening and Qualification Services; COTS Microelectronics Ruggedization; Hybrid and Monolithic Circuit Design, Prototyping, Packaging and Production, etc.

Biotechnology SBU: Muscle Scaffold Development, Muscle Regeneration Reactor Development, TBI Sensor on a Chip Test Platforms, Vaccine and Toxicology Testing Services, etc.

KEY POINTS OF CONTACT

Microelectronics SBU:
Dr. Matthew Leftwich – President / Engineering Director
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Phone: 479-935-3374

Nanotechnology SBU:
Dr. Parker Cole – CSO / Lead Chemist
Email: pcole@nanomatronix.com
Phone: 479-935-3374

Biotechnology SBU:
Dr. Gage Greening – CTO / Lead Biomedical Engineer
Email: ggreening@nanomatronix.com
Phone: 479-935-3374

KEY PROJECTS OR PRODUCTS

UL-CNT: http://www.nanomatronix.com/carbon-nanotubes/
TITAN: http://www.nanomatronix.com/titanate-nanofibers/
HyMEM: http://www.nanomatronix.com/contact/ (request brochure)
GOWZ: http://www.nanomatronix.com/go-whiz/
R-QSFP+: http://www.nanomatronix.com/contact/ (request brochure)
AMBIT: http://www.nanomatronix.com/contact/ (request brochure)
BioSKMR: http://www.nanomatronix.com/bioskmr/
AvIDT: http://www.nanomatronix.com/avidt-nanomaterial-toxicity/

Microelectronics Design, Ruggedization, Prototyping, Production and Screening & Qualifications Services per MIL-PRF-38534 and MIL-PRF-38535 QML/non-QML Standards (and other relevant commercial and/or customer defined standards)
http://www.nanomatronix.com/environmental-screen-and-qual/

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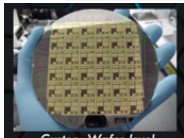
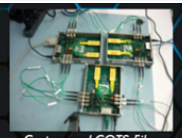
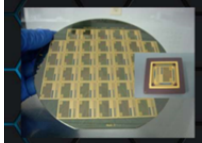


Custom Wafer-level Processing of Thin-Film Microelectronics MCM Substrates – Si, Alumina, Glass, Quartz, PI and LCP

Device-level and Board-level Reliability Trade-Studies per Relevant Industry, Military and Space Qualifications Standards



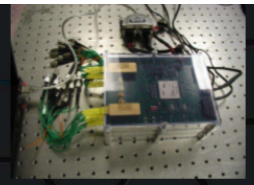
Custom and COTS Fiber Optic Networking (FON) TRX and NIC Design, Production and Testing for Harsh Environment Applications



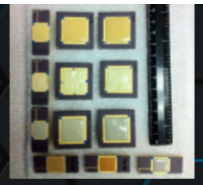
Integrated CNT Arrays and END Capacitors on Multiple Substrates – prototypes screened to 'class-K' level and exhibit high thermal stability

Full Capability to Design, Prototype, Screen, Produce and Qualify a Variety of Hybrid Microelectronics Devices

Flight Qualified SPI FON TRX on GSFC-ISS-ELC-HRDL NIC – Launched on STS-29 in November '09



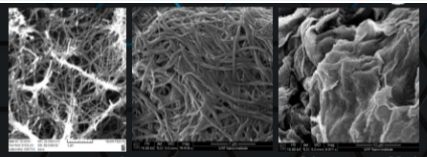
Embedded Systems Development for Rapid Response, Plug-and-Play Military and Spacecraft FON Communications Systems



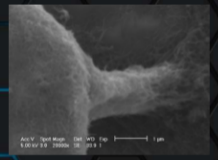
Nanoparticle Doped Epoxies for Encapsulation, Glob-top and Underfill Applications – improves reliability, RAD tolerance and/or limits reverse engineering

Wide Range of Thin-Film Microelectronics Design, Processing, Packaging and Testing Capability

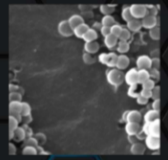
Full Capability for Hybrid Microelectronics Device-Level and Board-Level Assembly and Test



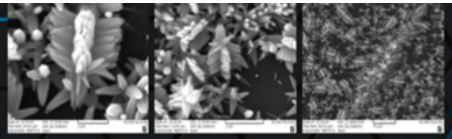
X-titanate, rutile and anatase nanofibers, scaffolds and membranes with applications in bioengineering, biomedicine, catalysis/photocatalysis, ceramics, composites, chemical separations and smart textiles



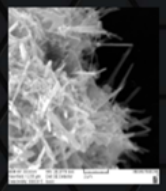
Carbon Nanotubes (CNTs) and coming soon – Ultra-long CNTs



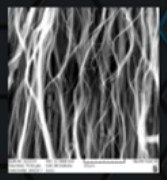
Ceramic Nanospheres (silicates, zirconates, titanates, tantalates, etc.)



Complex nanostructures – Zinc Oxide "trees" with applications in catalysis, optical coatings, UV/VIS absorbing, sensing and energy harvesting (nanoscale wide bandgap semiconductors)



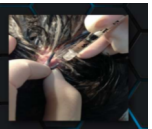
Ceramic Nanorods (titanates, tantalates, niobates, etc.)



Polymer Nanofibers and Novel Composite Nanofibers (PVDF, Nylon, PEEK, PE, Alginate, Chitosan, etc.)

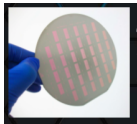
AvIDT – Avian Immunology Dermatological Testing

- patented avian dermal tissue test
- the most comprehensive method to test nanomaterials immunology and toxicology response in poultry and avian test subjects
- avian toxicology profiles are much closer to humans than rodents
- does not contaminate or harm the avian test subject
- FDA approval traction
- will allow us to become the exclusive service provider of the only FDA approved method to confirm initial toxicology/immunology of foreign nanomaterials, toxins, etc. in complex lifeforms



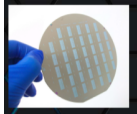
AMBIT – Advanced Microphysiological Brain Injury Tool

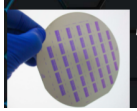
- an in vitro blood-brain-barrier technology for recapitulation of traumatic brain injury pathologies for drug discovery and development and diagnostic marker identification and validation



Electrochemical Nanolayer Deposition (END):

- low defect, DC insulating, dielectric thin films (2nm – 200nm)
- paraelectric films and nanorods: Al_2O_3, TiO_2, Ta_2O_5* and NbO_2 (relative permittivity – k – ranges from 12 – 32)
- indirect/wide bandgap semiconductor films and nanostructures: WO_3 and ZnO
- applications: capacitor dielectrics, sensors, optical coatings, UV/VIS sensing, etc.





Hydrothermal-Electrochemical Nanolayer Deposition (HEND):

- ferroelectrics: $BaTiO_3$ and $SrTiO_3$ (relative permittivity – k – up to 1000)

Radiation Blocking, Thermally Conductive Epoxies for Encapsulation, Glob-topping and Underfill Applications:

- ***highly effective at blocking/preventing x-ray/CT imaging***
- ***must study secondary emission effects in relevant RAD environments (proton, neutron and heavy ion) to confirm degree of effectiveness)***
- ***Intend to confirm secondary emission effects via an in-situ side-by-side comparison of an encapsulated experimental group and unencapsulated control group.***