



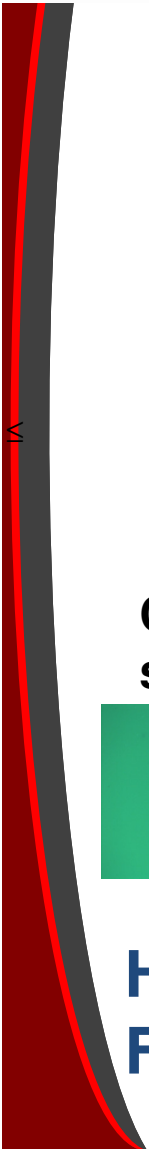
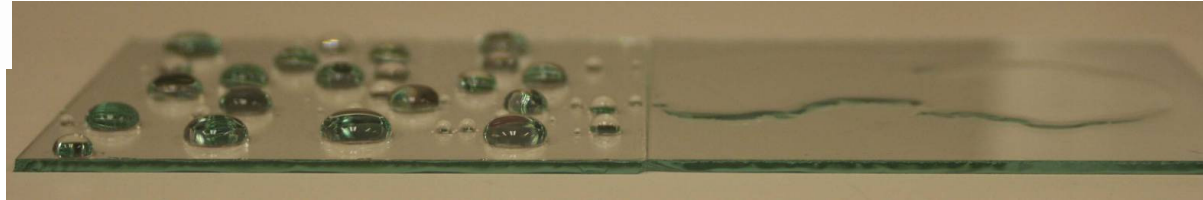
ORGANOSILICATE NANOPARTICLES AND ITS APPLICATIONS IN CHEM-BIOSENSORS, ELECTRONICS, MULTIFUNCTIONAL COATINGS AND TEXTILES

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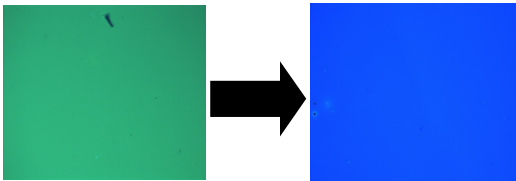
Venu Korampally, Shubhra
Gangopadhyay
University of Missouri - Columbia



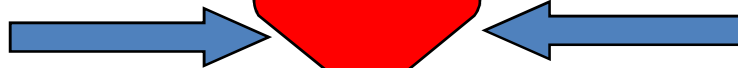
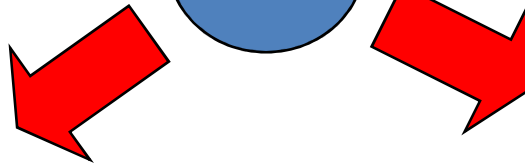
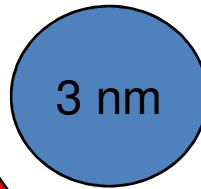
Hard, Hydrophobic Nanocomposites



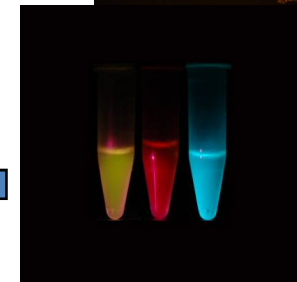
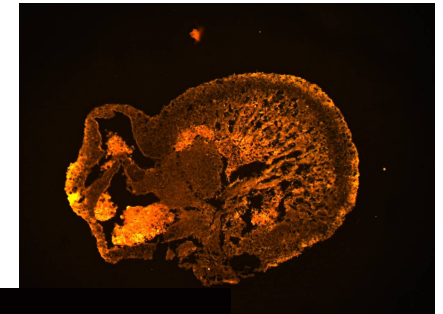
Chemical/Biological sensors



High surface area Films: Immunoassays

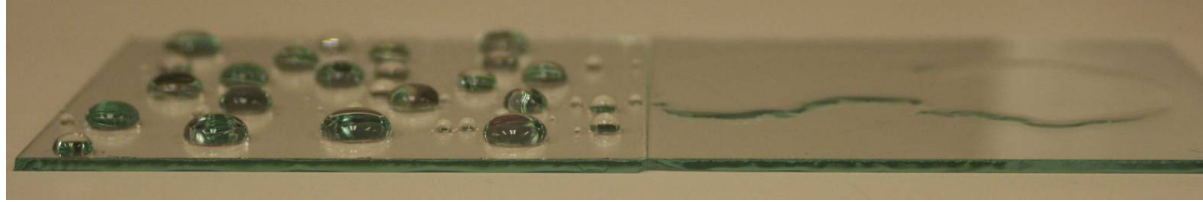


Dye Doped Nanoparticles Highly Photostable! > 3nm



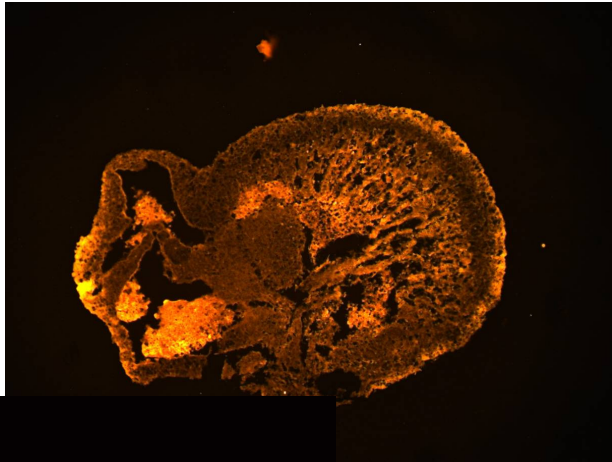


Hard, Hydrophobic Nanocomposites



- **Hard, Clear, Hydrophobic Coatings (Windsheild applications)**
- **Validated by Boeing company: High chemical resistance**
- **Multifunctional: Antibacterial, Corrosion resistant, etc**

Can be applied on any surface that needs a clear hard coat with high temperature Stability and chemical resistance



- **Photostable (Wouldn't Bleach)**
- **Ultra small sizes (3 nm) and Tunable (Only one in the world!!)**
- **Highly Fluorescent! (20 nm particle contains ~ 100 dye molecules)**
- **Validated by two independent research labs (Germany, US)**

***Chicken heart image credit: Dr. Luis Polo Parada



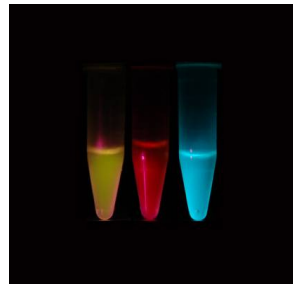
Unique Selling Points and Product Positioning



- One technology – 3 products
- Patented technology (**patent approved** and exclusivity to NANOS)
- High surface area platform and reliability
- Multifunctionality -3 different products
- Inexpensively scalable



Market Opportunity



Target: *In vitro* diagnostic market - \$ 40 Billion/yr

Includes

- 1) Pharmaceuticals
- 2) The food industry,
- 3) Lifesciences
- 4) homeland security and defense.

**Highly efficient, cost effective alternative for
Fluorescent markers and planar assays**

**Estimated market penetration rate of 0.01%, 0.025% and 0.05% for
Yr 1, Yr 2, Yr 3**



Competitive landscape, Barrier to Entry



- IP Protection on core technology
 - University of Missouri holds IP
 - NANOS has exclusive license on several patents
- Enabling Patent Approved:
 - Synthesis of unique Organosilicate Nanoparticles with large surface area and applications thereof (approved)
 - Other patent applications will be filed

NANOS has the freedom to operate



Commercialization Strategy



- Continue to leverage government sponsored research to advance development (ARL, LWI, US Army)
- Identify strategic alliances and licensing of technology
 - Sigma Aldrich: Dye doped nanoparticles
- Form new ventures to attract private equity investment to complete commercialization



DEAL SOUGHT

(Investor Value Proposition)



- Funds for development of dye-doped nanoparticle technology
- Funds for scaling of PMSSQ nanoparticles, dye-doped nanoparticles
 - Amount needed: ~\$1 million/ 2 years
- Return on Investment (ROI)
 - Appropriate level of equity

FLEXIBLE DEAL

partnership, sublicensing, equity share, availability of expertise



Science Team



NANOS TECHNOLOGIES LLC.

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Dr. Sangho Bok, Project Manager

University of Missouri

Dr. Shubhra Gangopadhyay, LaPierre Professor, Electrical Engineering
Dr. Venu Korampally, Research Assistant Professor, Electrical Engineering
Mr. Steven Hamm, Graduate Student, Electrical Engineering

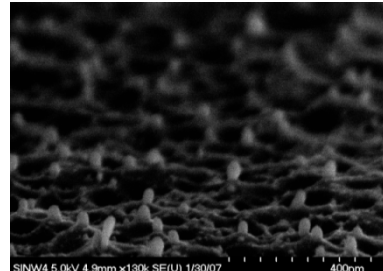
University of Missouri Support Centers

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Wayne McDaniel, Technology Management & Industry Relations
Brett Maland, Technology Management & Industry Relations
Jim Gann, University Center for Innovation & Entrepreneurship

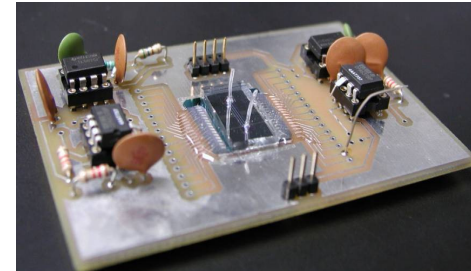
Energy



Nanoelectronics



Nano-biosensors Lab-on-chip





Thank You



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- Contact Information:

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