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Nano-Bio Materials Consortium

The Nano-Bio Materials Consortium (NBMC) was founded to bring together scientists, engineers and business development professionals from industry, government and universities to collaboratively initiate research and development of electronic technologies to improve human performance monitoring and performance augmentation. The goal is to proactively build an ecosystem that can drive healthcare and medical electronics innovation towards products that serve society faster.

OVERVIEW

By creating a community of experts who conduct strategic gap analysis and vet the placement of public/private sector funding, NBMC focuses on specific challenges and opportunities early in the R&D process and raises the readiness levels of nano and bio technologies. NBMC was formed in 2013 under a cooperative agreement with the U.S. Air Force Research Laboratory (AFRL) to SEMI-FlexTech. AFRL and SEMI have partnered to focus on several key application areas for next-generation medical monitoring in the defense sector, but common enabling electronic technologies for health and wellness create an excellent example of dual-use opportunity. Innovations in the public sector are springboards for new products in digital health and personalized medicine.

Since 2013, seventeen separate programs with more than two dozen organizational participants developed materials, electronics, microfluidics, manufacturing processes and algorithms to create low cost, wearable sensors. Most of these integrated sensing systems communicate wirelessly, are flexible and incorporate high performance silicon devices that are designed to move with the individual. Previous advancements included subsystems designed for ECG, functionalized biomarker sensors and hydration sensors.

The NBMC program continues its next phase, with an emphasis on advanced electronics to develop technologies relevant not only to health monitoring but also diagnostics and performance augmentation. These innovations are laying the groundwork for new products in digital health and personalized medicine as well as enabling solutions for the US Air Force en route care mission, point-of-care diagnostics and overall health protection.

NBMC BY THE NUMBERS

Established: **2013**

Industry Partners: **26 and growing**

AFRL Funding: **\$6.9 M 2014-2018**

Anticipated Funding*: **\$21 M 2019-2023**

2019 Funds: **\$7.2 M**

Cost Share: **\$9.0 M through 2018;
60% anticipated on
future projects**

*NBMC is funded annually through the Congressional appropriations process. Funds are not guaranteed until the budget is passed by Congress.

DUAL USE APPLICATIONS	MARKET DRIVERS	ENABLING ELECTRONICS TECHNOLOGY*
Imaging	Diagnostics High fidelity Mobility	Transducers EM transceivers 3D & 2.5D integration
Point of Care Diagnostics	Wireless Deterministic Continuous monitoring Efficient reagent and sample prep	Microfluidics Data storage & analytics Wireless communications AI & support algorithms
Wearable Health Tech	Accurate Light weight Power Efficient	Renewable power Flexible / wearable material Biochemical processing
En Route Medical Care	Reliable in extreme environments Data collection, analytics, mobility Pain management Data security	Multimodal sensing Sensor data fusion SW & HW cybersecurity

*Note: this table contains only a sample of the enabling electronics technologies for the targeted applications.

Program Supported By: 

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Engage With NBMC

WHY TO ENGAGE

NBMC is structured to help organizations in and around the nano-bio materials industry make meaningful business connections and better-informed decisions. Device manufacturers, software providers, consultants, materials and equipment suppliers, foundry partners, market analysts, OEMs, integrators, non-profits, investors and end-users from across industry and U.S. Defense, all plug into the NBMC network to form alliances that will move their businesses and strategies forward faster.

Engagement in the process and findings ensures participating organization are current with R&D trends and activities.

Our consortium model is based on more than 20 years of experience and ensures that the intellectual property (IP) developed remains with the inventor. Members are accorded an evaluation license that restricts use for non-commercial development only while fostering collaboration. The evaluation license is in effect only for the time they remain members of the consortia.

See below for benefits and requirements of each level of membership.



HOW TO ENGAGE

For additional membership information or a copy of the NBMC Participation Agreement, contact:

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If your organization wishes to become a part of SEMI, contact Andy Knopes at aknopes@semi.org.

LEVEL	BENEFITS	COMMITMENTS/ REQUIREMENTS
NBMC Stakeholder Level	- SEMI Member Technology & Marketing Benefits - Eligible to propose projects for funding - Access to the NBMC-MedTech member network at the individual level (Connect@SEMI) - Updates on NBMC-MedTech activities - First notification of RFP release	SEMI Membership
Technology Advisory Committee	<i>All of the above, plus,</i> - Suggest topics for funding - Review responses to RFP and recommend funding - Participate in project reviews	SEMI Membership Signed Participation Agreement
Governing Council Level	<i>All of the above, plus,</i> - Evaluate responses to RFP - Rank and vote responses to RFP - Participate in creation and approval of annual governing plan	SEMI Membership Signed Participation Agreement Approval by Governing Council members \$5,000