

# Potential Aerospace Materials Process Breakthrough

## Machinable Carbon Composite Blocks

### \$350k Equity Seed Funding for Proprietary Loom Design

#### INTRODUCTION

- **Novo Navis** has identified a different process to manufacture carbon fiber material into strong, lightweight parts
- Instead of traditional lay-up methods of manufacturing, this patent-pending vision weaves the material **three dimensionally** into **large carbon blocks** that can be **milled like metal**
- Unlike traditional carbon fiber, the resulting material is **strong in all three dimensions** (isotropic)
- Material produced coined “Elogium”
- One-of-a kind, **patent-pending** technology process
- While successfully hand-woven in time-consuming lab tests, **seed capital is needed to design a proprietary 3D loom to manufacture proof-of-concept Elogium on a larger scale**
- DOD Contractor
- Air Force Research Laboratory partner

#### TECHNOLOGY THESIS

- **Would be the only technology known to make true isotropic carbon fiber**
- Proprietary method using resin, catalyst and clever UV distribution permits curing at the fiber strand level
- When woven three-dimensionally, produces a solid block of Elogium which can be milled - **an industry first**
- **Future enhancement** could include embedding Elogium with optical fibers that act as a stress sensor reporting material health

#### POTENTIAL ADVANTAGES

- Reduces cost by eliminating need for special tooling and methods to shape traditional carbon fiber parts
- Greatly reduces carbon part manufacturing time by eliminating the current layup process of multi-layers at different angles
- Lighter, shock tolerant, stronger – isotropic strength in all 3 axes
- Woven, not 3D-printed, resulting in higher stress tolerance
- Long life – won’t delaminate like traditional carbon fiber
- With future smart material developed by Novo Navis, the structure can self-test itself without destructive methods

#### THE OFFERING

**\$50,000 raised to date through grant from U.S. Air Force** (SBIR Phase I).

With the theoretical process demonstrated on a small, hand-woven scale, a proof-of-concept 3D loom must be designed and built to establish that larger blocks of carbon fiber material can be made. This step will cost \$350,000 to execute.

Additional investment opportunities in material testing phase

#### Use of Funds

Design/fabrication of a proof-of-concept, 3-D loom for weaving Elogium together into solid blocks of machinable carbon fiber.



Early laboratory carbon composite block specimen

*Novo Navis to disrupt carbon fiber fabrication industry*