UMASS BOSTON

Invention Available for Licensing Nanomaterials

Title: ***High Aspect Ratio Nanostructures and Methods of Preparation***

UMB14-05

Inventors: ***Martin Thuo and Ian Tevis***

Applications:

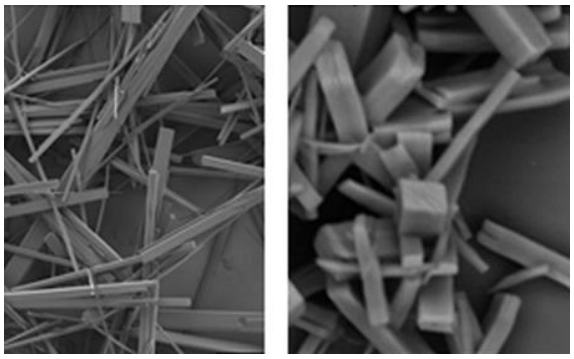
- Multiple applications in electronics, semiconductors, solar energy
- Use in industrial catalysis

Benefits:

- Easier to scale up without elevated temperatures
- Reduced production costs

Technology Description: Gallium oxide nanostructures are currently made using a variety of high-temperature methods. This invention provides methods of preparing nanostructures and films that do not rely on high temperatures, costly equipment, or catalysts, that would advantageously reduce the cost of preparing high aspect ratio nanostructures at comparable or improved yields. The method features adding a metal to a reaction solution, forming a metal oxide on a metal surface, shearing off metal oxide particles from the metal surface, allowing the sheared metal oxide particles to self-assemble into nanomaterials, and casting the self-assembled nanomaterials on a substrate to form the nanostructure. These methods create metal oxide nanomaterials in the shape of nanoribbons and nanowhiskers, which can wrap around each other or assemble into different configurations. The nanoribbons can be stacked to give white sheets of solid material. The nanowhiskers can be assembled to create a highly porous material.

Patent and Publication Status: UMass Boston is the owner of a pending U.S. patent application on this invention.



An SEM image of stacked nanoribbons of different dimensions in accordance with the method of the invention.

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