

**The Opportunity**

Researchers at the National Institute of Advanced Industrial Science and Technology (AIST) of Japan have developed and patented a unique [three-dimensionally connected silica sphere/resin composite](#) that resists loss of rigidity at temperatures above the glass transition temperature.

**Technical Features**

When a low polymer of an alkoxy silane is subjected to hydrolysis and polymerization in a mixed solution with a water-soluble polymer and an acid catalyst in a mixed solvent composed of water and alcohol, a new structure having unique physical properties can be obtained.

The resulting structure consists of interconnected silica spheres where the spheres partially overlap. This allows for substantially increased temperature stability.

AIST is a recognized authority in the field of silica spheres and composites made from them. AIST technologists have developed a range of materials that are light, strong, and inexpensive.

Five patents protect various forms of these materials:

<b>US Patent</b>	<b>Features</b>
<b>6,071,997</b>	• Three-dimensionally connected silica sphere/resin composite
<b>Additional Silica Composites Patents of Interest</b>	
<b>5,900,450</b>	• Three-dimensionally connected silica sphere/resin composite
<b>5,656,250</b>	• Three-dimensional network structure of silica particles
<b>5,304,243</b>	• Method of producing organic group modified silica particles
<b>Mesoporous Silica for Controlled Release</b>	
<b>6,902,806</b>	• Mesoporous silica having controlled-release on-off control function

**Intellectual Capital**

AIST (National Institute of Advanced Industrial Science and Technology) is Japan's extensive public research organization established in 2001. AIST and its predecessors have advanced



technology and supported Japanese industries since 1876.

Although not specifically a government institution, AIST is largely funded by the Japanese government.

Comprised of more than 50 autonomous research units in various innovative research fields and employs about 2500 research scientists and well over 3000 visiting scientists.

**AIST Home Page:**

[www.aist.go.jp/aist\\_e/about\\_aist/index.html](http://www.aist.go.jp/aist_e/about_aist/index.html).

**For More Information**

AIST is seeking to license this technology and provide assistance with its commercialization success to qualified organizations.

Consideration will be provided to a range of financial, strategic, and commercial investment options.

Certain circumstances will warrant consideration for nominal funding from AIST.

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