FIRST PRINCIPALS
Technology Transfer & Commercialization

THIN METAL FILMS

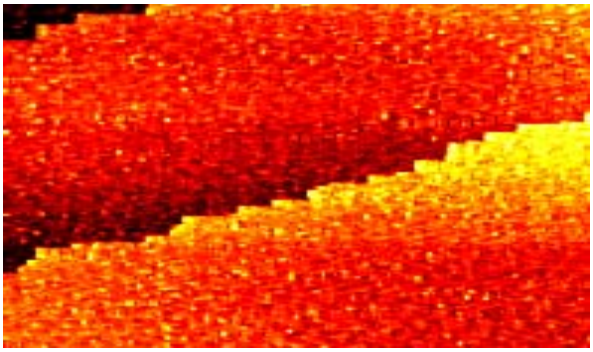
The Opportunity

Researchers at the National Institute of Advanced Industrial Science and Technology (AIST) have developed significant **expertise in various methods of depositing ultrathin, and in some cases, monoatomic, metal films**.

The patented technologies, which possess unique properties and utility in valuable applications, are now available for licensing.

Metal oxides are emerging as technically important materials because of the wide variety of physical properties they possess. This makes them attractive for applications such as photovoltaic devices, gas sensors, microelectronics, and corrosion protection devices.

Transparent conductive films are used as electrodes for driving liquid crystals, serving as a display element for an information terminal in a computer or cell phone.



Intellectual Property

Patents protecting the intellectual property are described as follows:

Patent	*Features*	*Inventors*
5,786,094	· Vapor deposition of transparent and highly conductive ultrathin films of a wide range of *transition metals*.	Kiuchi, Chayahara & Akiyoshi
5,804,255	· Vapor deposition of transparent and highly conductive ultrathin, *transition metal* films of 1—200 nm; preferably ~30 nm.	Kiuchi & Chayahara
6,641,937	· Transparent conductive films of *indium tin oxide* possessing low-resistance and high conductivity for higher speed liquid crystal devices.	Kiuchi, Masato, Murai, Tamura & Umesaki
6,039,847	· Method and apparatus for forming a highly pure thin film by ion beam sputtering (*Cesium ions*); enables effective semiconductor production and doping at low temperatures.	Chayahara, Horino, Kinomura, Tsubouchi & Fujii
6,132,568	· Piezochromic *samarium sulfide* thin films; e.g. for window coatings.	Jin & Tanemura
6,036,773	· Method for growing high density, highly uniform, *Group III* metal film to enable atomically controlled fabrication of quantum wires and other semiconductor quantum nanostructures.	Wang & Ogura
5,763,340	· Production of *SiO2 glass* material with regions changed in light defractive index to enable easy formation of waveguide structures.	Nishii, Fukumi, Chayahara, Fujii & Yamanaka

Organizational Capabilities

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

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.

For More Information

AIST is seeking qualified licensees for this technology and will provide assistance for its commercialization. Consideration and 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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