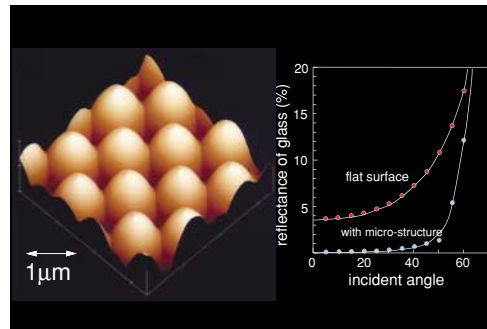


New Optical Functions brought by Micro-Processing of Glass

Micro-processing of glasses is a key technology for the future optically functional devices. A sub-wavelength cone or pyramidal shaped periodic structure, which is called a Moth Eye, was successfully formed on glass. The surface reflection of incident light from a tilted angle is effectively minimized by this structure. Such a structure is expected to be applicable on the surface of several optical devices or display. Much effort is also made for the development of athermal waveguide devices. Temperature drift of the optical signal was suppressed by 1/2 with the compositional modification of the waveguide. Electric power

required for the wavelength division multiplexing network should be minimized by this technology.



Antireflection structure formed on glass

Junji NISHII

Photonics Research Institute

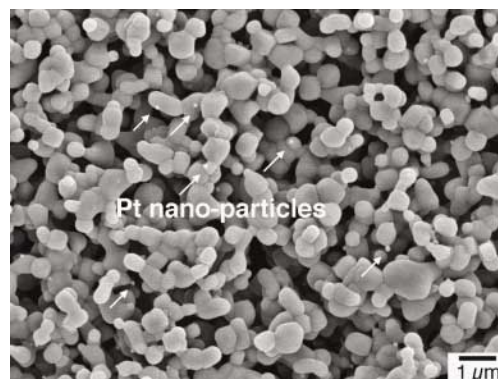
e-mail:

junji.nishii@aist.go.jp

AIST Today Vol. 1, No. 11
(2001) 19

Development of Porous Ceramics with Excellent Functionality

Hot-gas cleaning is a key issue for various combustion and power applications, and porous ceramics play important roles for the physical filtration of soot. Following the development of the open-porous $\text{CaZrO}_3/\text{MgO}$ composites with a 3-D network structure, we have successfully synthesized a porous $\text{CaZrO}_3/\text{MgO}$ composite with platinum nanodispersion via simple *in-situ* processing. Its catalytic NO -decomposition rate reached ~50 %, and this result suggested the possibility of the porous composite as a multifunctional filter for simultaneous hot-gas filtering and NO_x removal. Currently, we are developing porous $\text{CaZrO}_3/\text{MgAl}_2\text{O}_4$ composites with improved chemical stability and mechanical properties.



Microstructure of a porous ceramic with Pt nano-particles

Yoshikazu SUZUKI

Synergy Materials

Research Center

e-mail:

y-suzuki@aist.go.jp

AIST Today Vol. 2, No. 1
(2002) 8