(Press Release) May 18, 2009

More vivid 3D video, without glasses!!

- Applying Super Hi-Vision technologies in Integral 3D TV -

- NHK, in collaboration with Victor Company of Japan, Inc., has developed an Integral 3D TV using Super Hi-Vision (SHV) image technologies (33 million pixels), thereby successfully increasing the resolution of 3D images.
- For an Integral 3D TV to be viable, it must offer high image quality (high resolution) as well as clear visibility with broad viewing angles. Because this requires capture and display technologies with far greater resolution than conventional Hi-Vision (HDTV), NHK have been conducting R&D activities targeting an Integral 3D TV that uses Super Hi-Vision (SHV) image technologies[*1].
- Capture and display in Integral 3D TVs uses a "lens array" comprised of many small elemental lenses. A larger number of elemental lenses results in higher image quality. If each elemental lens has a higher number of SHV pixels for capture and display, then the 3D image can be seen more clearly across a broader viewing angle. The recently developed Integral 3D image capture system uses about four times more elemental lenses than any past system.
- Using this lens array and the newly developed SHV system with a resolution of 33 million pixels (7,680 horizontal x 4,320 vertical), NHK has succeeded in increasing the resolution of 3D images without reducing the angle at which the 3D images can be viewed clearly.
- The new system will be on display at the Science & Technical Research Laboratories Open House, which will be held from May 21 (Thurs.) to 24 (Sun.).

*1 SHV video based on the "Dual Green" method. The "Dual Green" method uses four panels (8 million pixels) designed to achieve 2,000 scanning lines. Of the three primary colors that make up light, green contributes most to visual definition. Two panels for green (G) signals are thus positioned with a half pixel shift on a diagonal plane, and the panels for red (R) and blue (B) signals are positioned between the two green panels to obtain an actual resolution of 4,000 scanning lines.

*Part of this research was conducted as "Research and Development targeting multi-parallel image reproduction 3D TV systems," under contract from the National Institute of Information and Communications Technology (NICT).

(Ref.) Integral 3D TV

Integral 3D TV uses lens arrays comprised of many small lenses to achieve 3D capturing and display. These lens arrays capture large groups of small image pixels as seen from various angles, and this makes it possible to recreate the 3D image. The lens array is placed in front of the TV camera lens for shooting, and when the image is to be displayed, the lens array is positioned in front of the screen for an LCD or projector TV; the viewer then watches the 3D image through the lens array.

Integral 3D TV has a number of features that make it ideal for home TV viewing:

- No special 3D glasses are required.
- If the viewers move horizontally or vertically, the 3D images corresponding to the viewer's position can still be observed, as though viewing the actual object.
- The 3D image is visible even when viewed at a 90 degree rotation.
- The apparent position of the image is the same as the optic position, so eye fatigue is minimized.

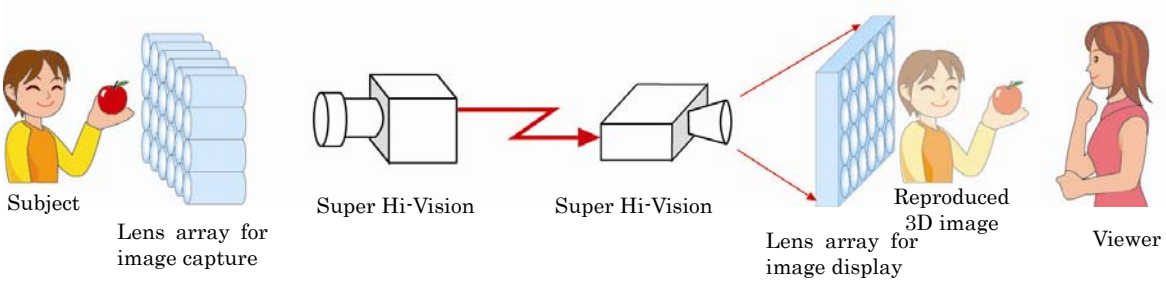

Fig. 1: Integral 3D TV system

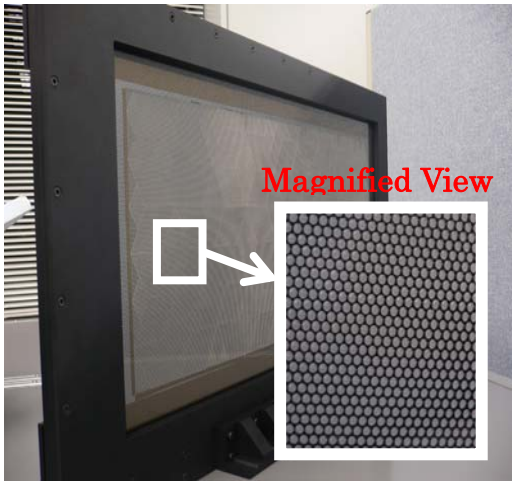

Fig. 2: Newly developed lens array for display

Fig. 3: Example of displayed image