

EXPERIMENTAL STUDY OF INTEGRAL PHOTOGRAPHY (IP)

IP is the ideal technology of 3D printing material that embedded perspective image data not only in the horizontal direction but also in the vertical direction unlike the lenticular technology. For this reason, supposing it is on the table, no matter where you may see from, you definitely can realize the 3D effect.

The principle originates in research of Dr. Gabriel Lippmann who won the Nobel Prize for physics in 1908. However, it require advanced imaging-process, especially very precise position between each lenses

and printing dots to produce the 3D effects. Therefore IP has not been adopted for a long time in the printing industry.

We are continuing development for the purpose of succeeding this IP technology for the past 15 years. **DRUPA 2008 is the memorable year that celebrates a centennial from his Nobel Prize award.** Then, we want to contribute to expansion of the 3D printing market while we introduce the present sample.

Compare lens array with other

| | Integral Photography | <i>Lenticular Lens 3D</i> | HALS (Honeycomb-Array Lens Sheet) |
|--------------------------|--|------------------------------------|---|
| Lens shape | Dots lens | <i>Cylindrical (Line shape)</i> | Dots lens |
| 3D principle | Binocular disparity | <i>Binocular disparity</i> | Binocular disparity & motion parallax |
| Enable picture | Natural picture | <i>Natural picture</i> | Frequent pattern image |
| Observant direction | All round | <i>Only vertical lens position</i> | All round |
| Accuracy register | Strict all directions | <i>Strict horizontal direction</i> | At ease |
| Portion 3D | Still developing | <i>Basically Impossible</i> | We can do it |
| Feasibility | No commercial use yet | <i>Ordinary commercial base</i> | Increasing recently |
| Cost efficiency | Too expensive | <i>Expensive</i> | Competitive |
| The spirit of innovation | Non-mass production | <i>Over 50 years history</i> | 15 years history |
| Originality | No one can print | <i>Popular</i> | Portion lens by our technology |
| Graphic software | Special software will be essential | <i>Useful for market softwares</i> | No need any special software |
| Our business | Developing its technology Near future we will do it | <i>Manufacturing by OEM</i> | Developing/Provide Licenses / Welcome OEM production |

Exhibition Sample

We have been continued our effort in research and development that manufactures a dot lens array by printing method for the past 15 years.

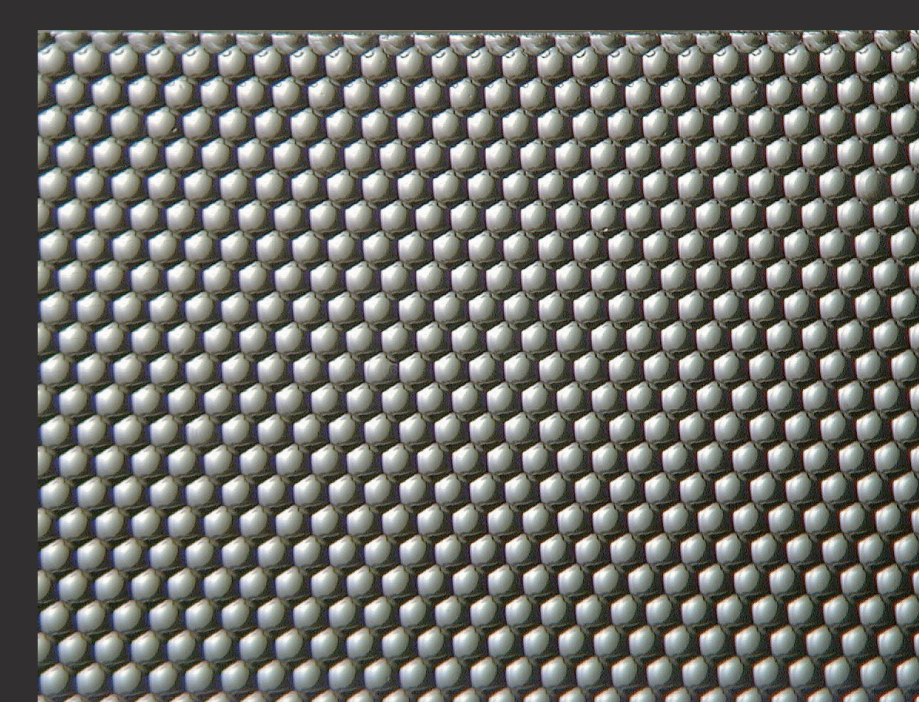
At present, we manufacture the product called HALS (Honeycomb array lens sheet), and are using it for 3D printing material by application of a frequent pattern image. This HALS technology has been well accepted

and adopted various business uses in Japan. However, it is impossible to make 3D expression of the natural drawing with this technology.

We consider that this problem is solvable with IP technology, and exhibit the sample under development this time in Drupa 2008.



Dr. Gabriel Lippmann
The Inventor of IP technology
Winner of the Nobel Prize for physics in 1908



The Grapac's IP lens sheet