

Gravure Cylinder Engraving



GAA 2010 Packaging & Products Technology Conference

Condensed History of Cylinder Engraving

- Historical time-line for gravure cylinder imaging
 - Chemical etching
 - Electro-mechanical
 - Indirect laser
 - Direct laser

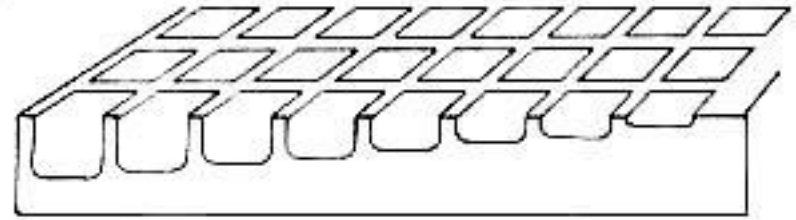


Chemical Etch Imaging

- Analog system based on film masters
 - Films imaged masking paper (carbon tissue)
 - Masked cylinder etched in Ferric Chloride acid
 - A 11 step process

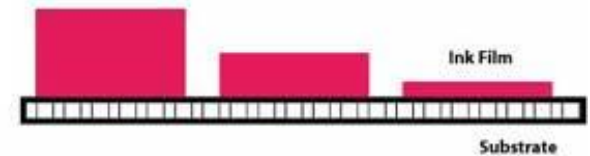


Analog Engraving Method / Ink Film

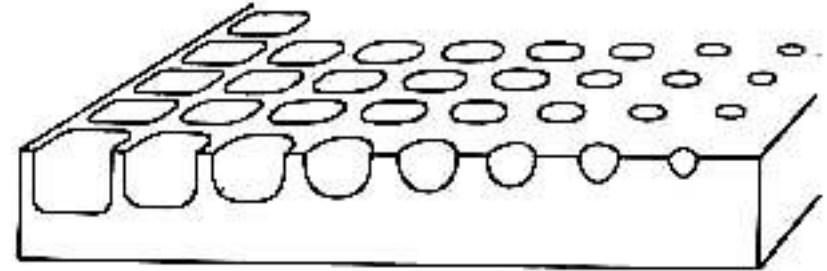


- Conventional Engraving
 - Imaged from a single film

Printed Dots - Side View

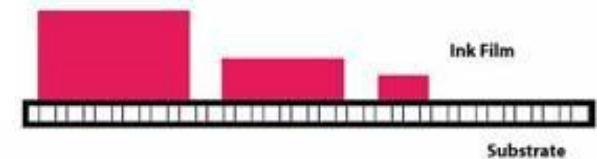


Analog Engraving Method / Ink Film

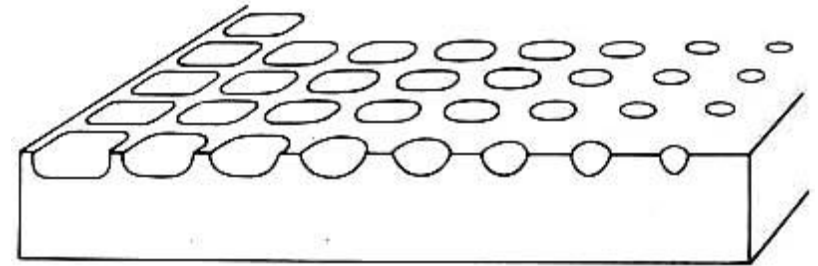


- Direct Transfer Etching
 - Imaged from 2 films
 - Autotypic cells

Printed Dots - Side View

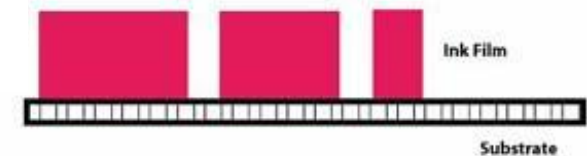


Analog Engraving Method / Ink Film



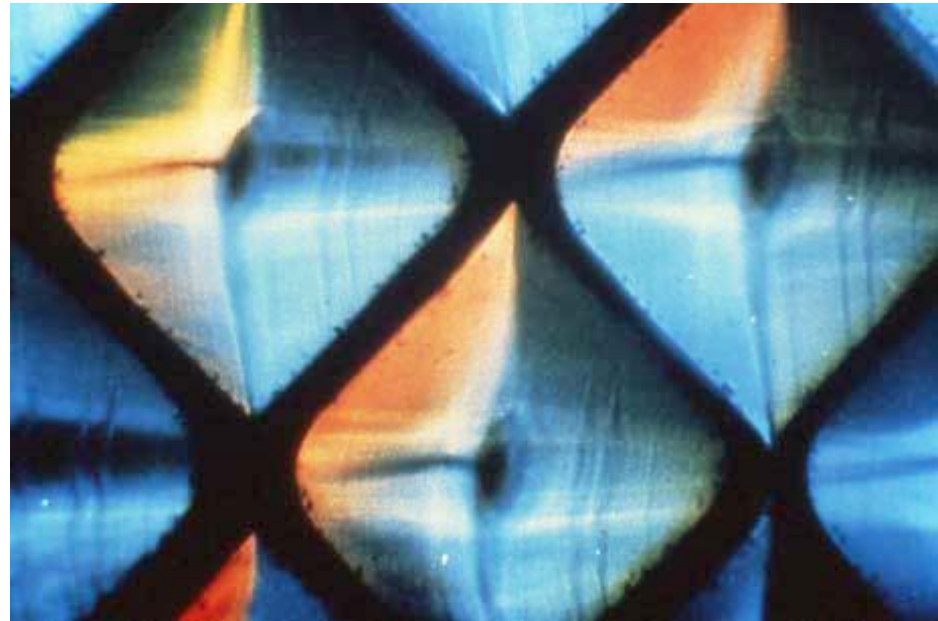
- Lateral Hard Dot Etching
 - Half-autotypic cells

Printed Dots - Side View



Stylus Engraving

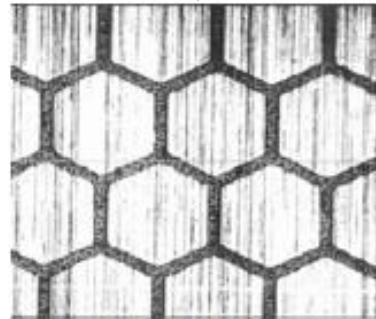
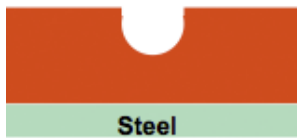
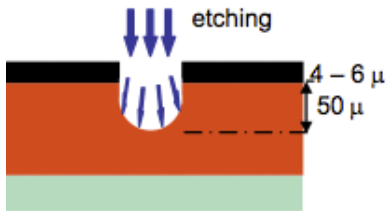
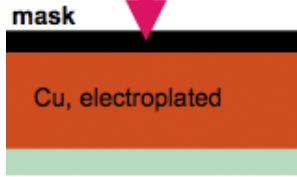
- Oscillating diamond stylus cut cells directly into the copper surface of the revolving cylinder
- Stylus creates pyramid-shaped cells
 - Half-Autotypic Engraving



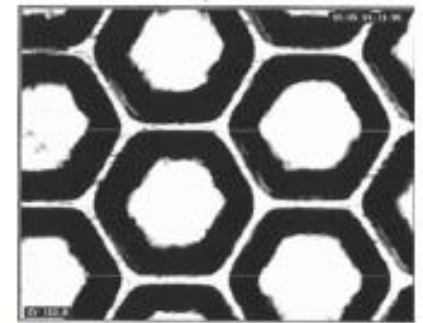
Indirect Laser Imaging



Nd:YAG,
Fiberlaser
8 -100W



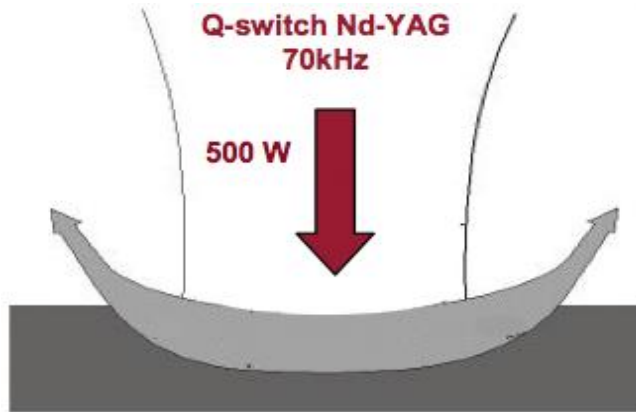
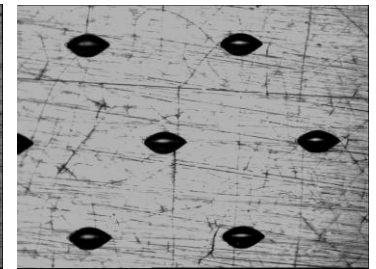
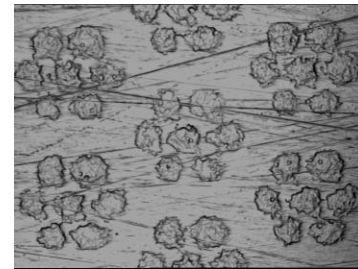
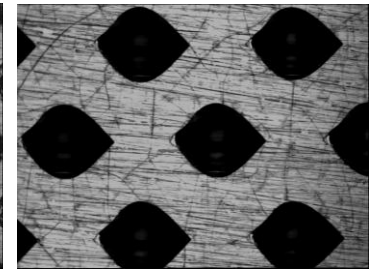
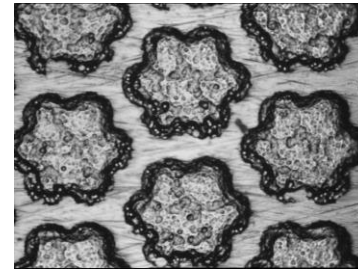
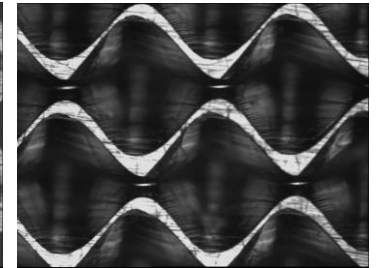
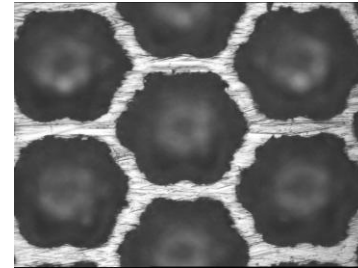
Ablated mask hexagons



Etched cells



Direct Laser Imaging



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