

クリスオプティクス 株式会社

CRYSOPTIX KK

NEW RETARDERS

-

COST EFFICIENT TECHNOLOGY



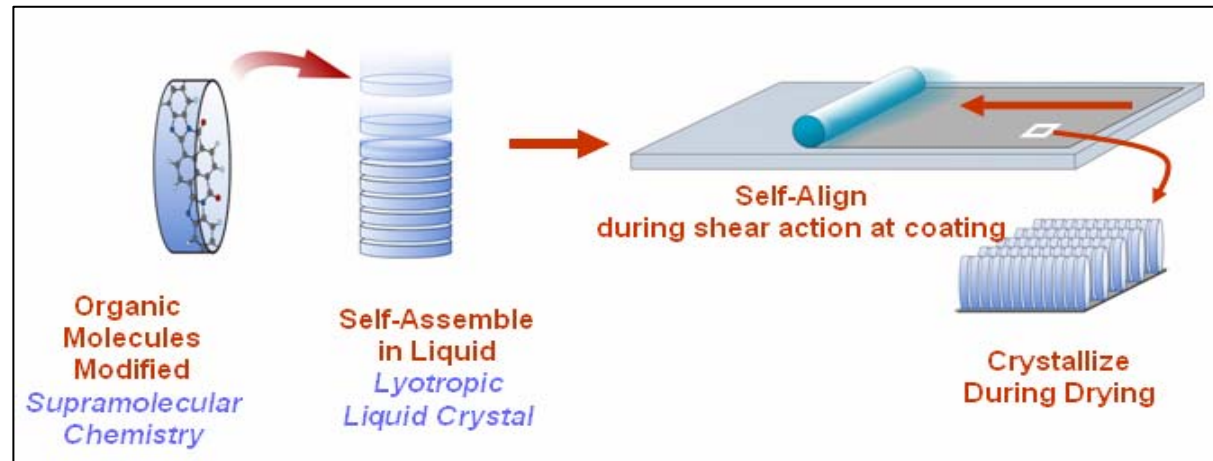
Crysoptix Technology



Crysoptix developed materials
for production of coatable optical components

Key Advantages:

- ❑ Reduced Cost
- ❑ Better Performance



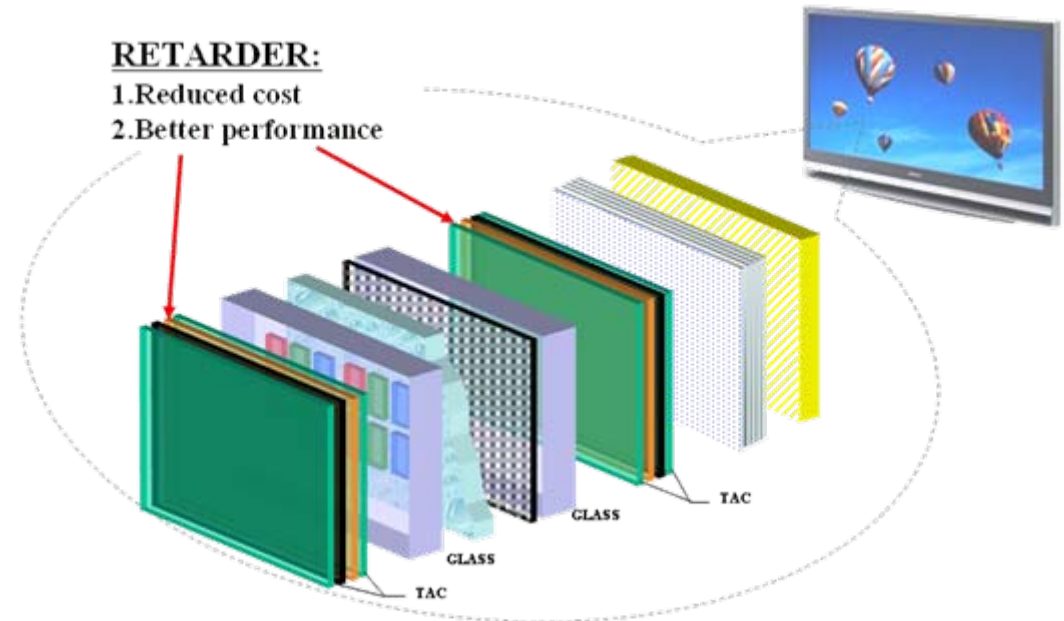
We have developed know-how and patented technology to engineer new materials which produce practically any type of molecular alignment during coating process.

Initial Offer to Home TV LCD Market



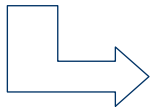
*We have completed R&D stage of coated retarders.
Our first offer to the LCD market is:*

- 1. Low cost coatable retarder compensates any type of LCD design (IPS, VA) by a single layer*
- 2. Retarder can be integrated into plastic polarizer (“on-plastic”) or directly into the LC cell on glass (“in-cell”).*



Optical Films Made by Printing

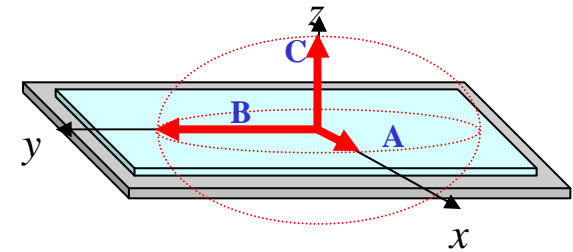
Liquid Material



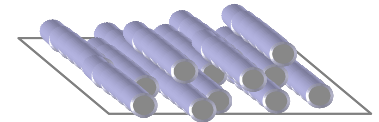
Slot Die Coating



Coating process creates molecular alignment



A-plate



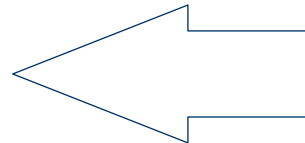
B_A-plate



C-plate



Final Coated Retarder

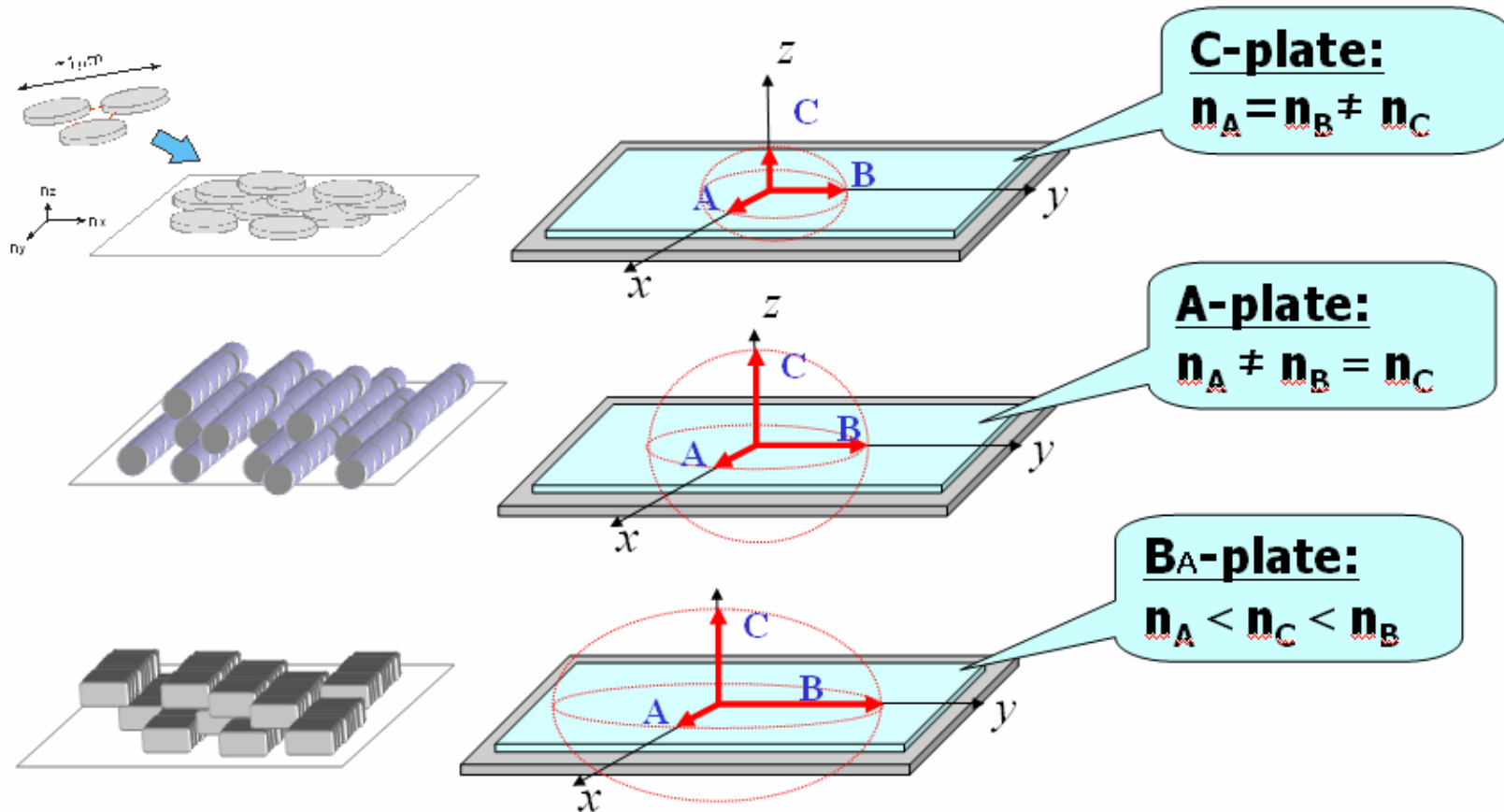


not the actual film shown

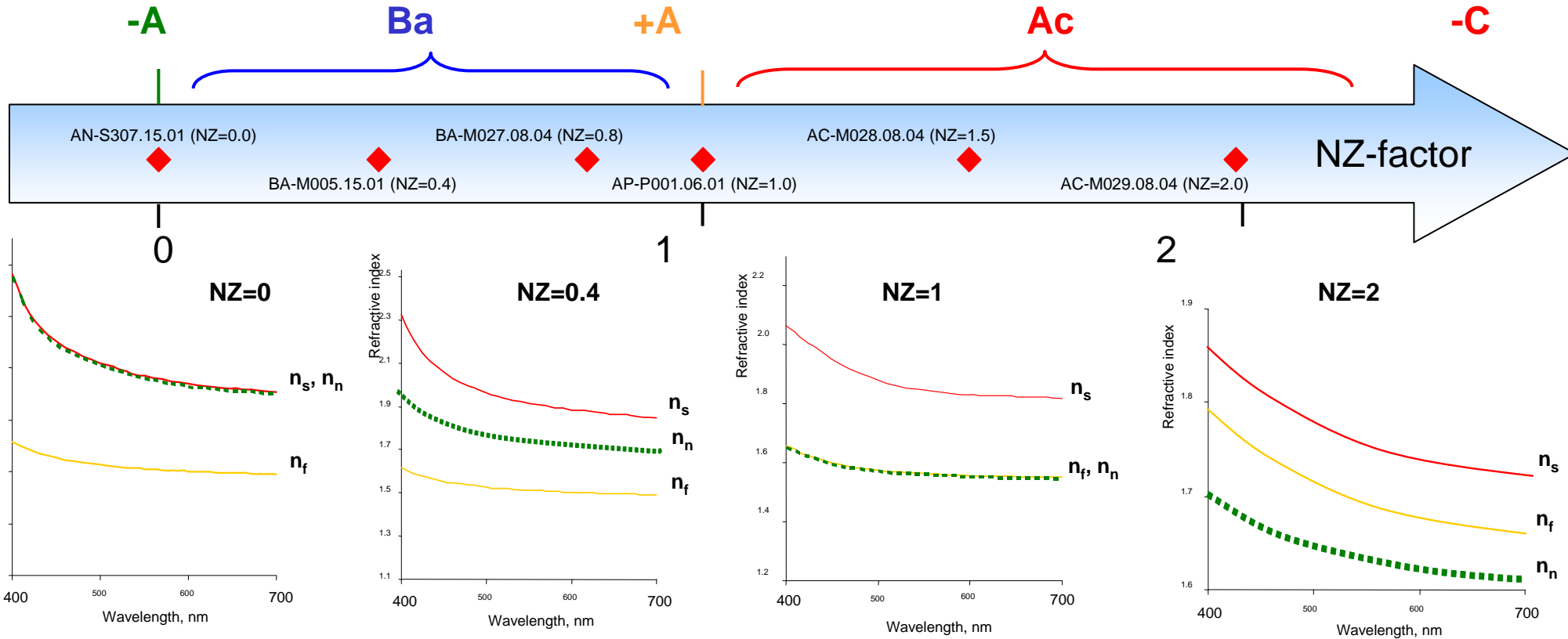
Molecular Alignment

For Different Types of Retarders

The different types of molecular alignment are controlled by the chemical structure and formulation



Line of Crysoptix Retarders



NZ-factor is the measure of a retarder biaxiality which is calculated as:

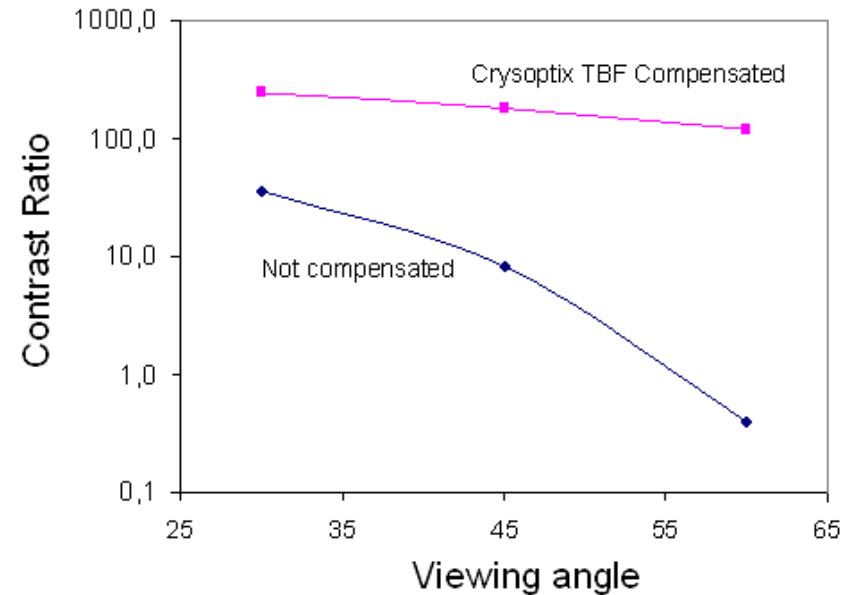
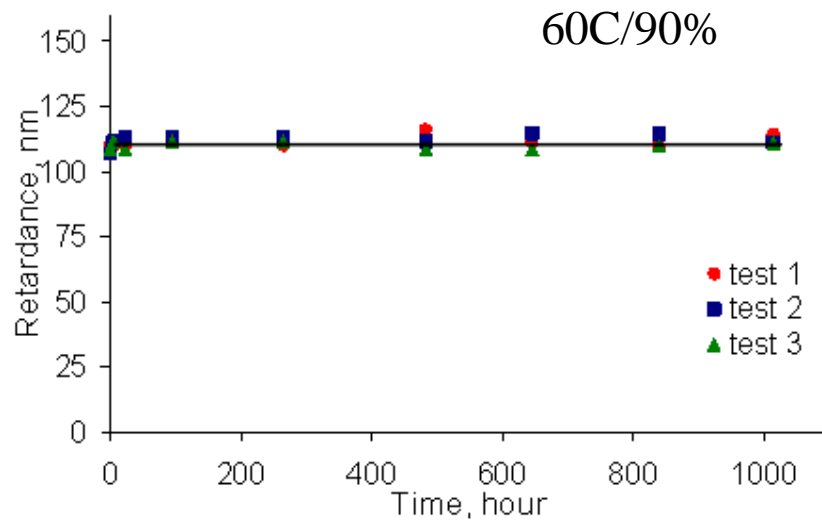
$$NZ = \frac{R_{th}}{R_o} = \frac{n_s - n_n}{n_s - n_f}$$

where n_f – lower in-plane refractive index (fast axis), n_s – higher in-plane refractive index (slow axis), n_n - out-of-plane refractive index;

$R_o = (n_s - n_f) \cdot d$ – in-plane retardation;

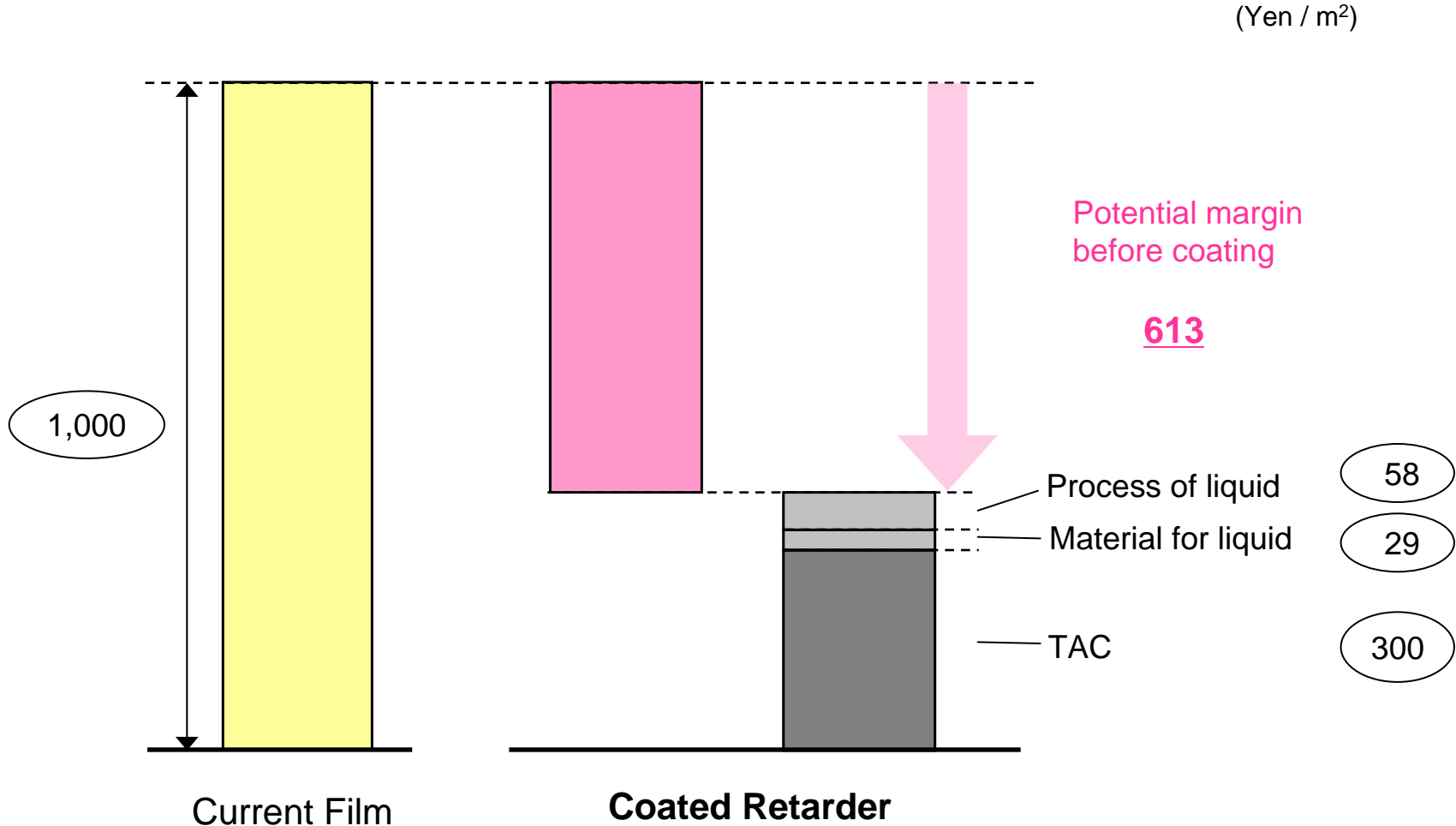
$R_{th} = (n_s - n_n) \cdot d$ – out-of-plane retardation

Features and Benefits of Retarders



- Wide viewing angle (IPS, VA)
- 200 times thinner for the same function
- Less materials used – less cost
- Coatable on glass or plastic
- Printing on glass: less supporting substrates – less cost
- Durable (60C/90%), High Temp stable: 230C for 3 hours

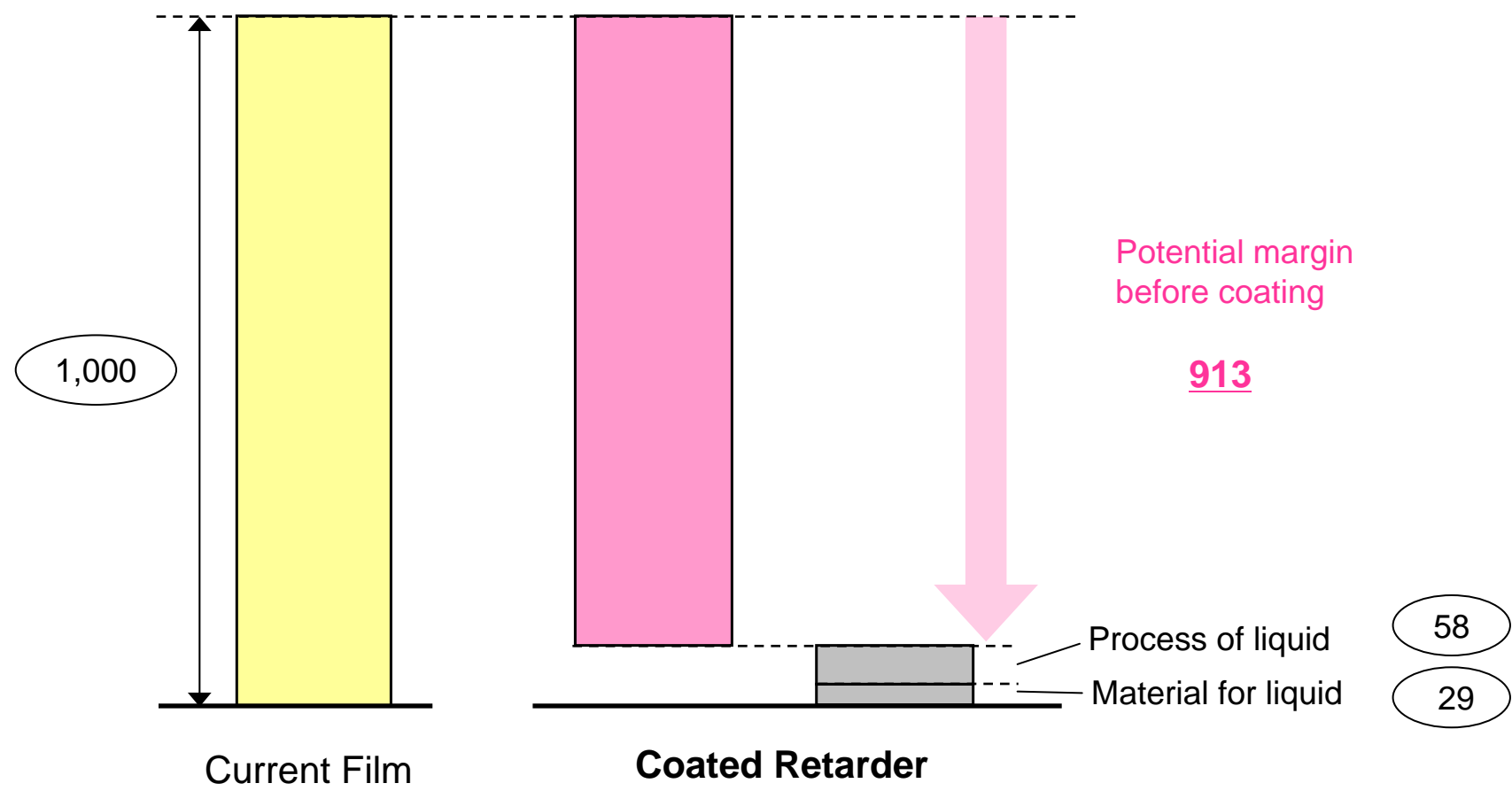
Cost Structure of Coated Retarder: on Film



Cost Structure of Coated Retarder: on Glass



(Yen / m²)



Cost Structure of Coated Retarder



(Yen / m²)

	On <u>Film</u>	On <u>Glass</u>
Market price of current film	1,000	
Process of liquid	58	58
Material for liquid	29	29
TAC (Substrate)	300	---
Total cost	387	87
Potential margin for coater	613	913

END

