



三菱ガス化学株式会社

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**高耐熱性無色透明ポリイミドフィルム「ネオプリム®」が  
「The 18<sup>th</sup> International Display Workshops」で最優秀論文賞を受賞**

三菱ガス化学株式会社は 2011 年 12 月に行われた「The 18<sup>th</sup> International Display Workshops (IDW'11)」において、高耐熱性無色透明ポリイミドフィルム「ネオプリム®」に関する口頭発表を行い、フレキシブルディスプレイ材料部門で最優秀論文賞 (Best Paper Award) を受賞しました。

「International Display Workshops」は毎年 12 月に日本で開催されるディスプレイ技術分野の国際的なワークショップであり、6 月にアメリカで開催される「Society for International Display」と並び、最先端技術の発表を聴講するため、ディスプレイ業界はじめ様々な分野から多数の関係者が集まるものです。そこでは、17 部門に関し多くの論文が発表されますが、技術的進歩や独自性の観点から、各部門それぞれにおいて最も優秀と認められた論文に最優秀論文賞 (Best Paper Award) が授与されます。

当社の「ネオプリム®」は高い耐熱性・透明度を特徴とするポリイミドフィルムであり、従来のガラス基板に代わる樹脂フィルムとして、高い成長が期待されています。今回の受賞を機に、「ネオプリム®」が将来のディスプレイを含む光入出力デバイスにおいて、薄型軽量化やフレキシブル化のため不可欠な材料となるよう、実需化を目指しマーケティングを加速して参ります。

〈本件に関するお問い合わせ先〉

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# IDW '11

THE 18th INTERNATIONAL DISPLAY WORKSHOPS

## *Best Paper Award*

presented to

J. Oishi, Y. Miki

for the paper entitled

FLX2/FMC4 - 1

Transparent PI Film for Flexible Display

Nagoya Congress Center, Nagoya, Japan

7-9 December, 2011

A handwritten signature in black ink, appearing to read 'Nobuki Ibaraki'.

Nobuki Ibaraki  
IDW '11 General Chair

A handwritten signature in black ink, appearing to read 'Mutsumi'.

Mutsumi Kimura  
IDW '11 Program Chair

# Transparent Polyimide Film for Flexible Display

Jitsuo Oishi, Yasushi Miki

## INTRODUCTION

Recently several devices such as a wide TV and a cellphone become thinner. Glass substrates are using in those devices, excellent material for transparency and heat durability for many years. But they need to be thinned by chemical etching or mechanical etching. If there is a new thin plastic substrate able to be used same as a glass substrate, roll to roll process can be used in assembly process of TV and many customers can buy a thin TV more cheaply. Mitsubishi Gas Chemical (MGC) thinks to make a new transparent polyimide able to be used as substrate. MGC has made a new transparent polyimide named "NEOPULIM" using an alicyclic monomer.

## PROPERTIES

We have two grades mainly. One is L-3430, high Tg grade and the other is L-1000.

Table 1 Basic Properties of NEOPULIM L-3430 and L-1000

	unit	L-3430	L-1000	remarks
Glass Transition Temp.	°C	303	260	DSC
CTE*1	ppm/°C	58	54	TMA 100~150°C
Heat Shrinkage	%	0.020	0.019	JIS K7133 200°C
Specific Heat	J/kg/K	1750	1530	DSC 200°C
Density	kg/m <sup>3</sup>	1230	1260	
Heat Conductivity	W/m/K	0.198	-	Laser flash 200°C
Contact angle	degree	76.2	78.2	
Water Absorption	%	2.1	1.6	24hours dipped
CHE*2	ppm/%RH	63	52	25°C 20~80%RH
WTR*3	g/m <sup>2</sup> /day	93	85	JIS K7129 200um

\*1 Coefficient of linear thermal expansion \*2 Coefficient of linear humidity expansion  
\*3 Water transfer rate

The most important features of NEOPULIM are transparency and high heat durability. We show heat durability data and optical properties below.

### Heat durability

Figure 1 is a result of differential scanning calorimetry. It indicates Glass transition temperature at 300°C.

Figure 2 is a result of thermogravimetric analysis. From room temperature to 300°C, there is almost no weight change. Over 300°C weight decreases gradually. Over glass transition temperature, polymer chain can move easily, so restrained solvent molecule is released from polymer chain. 5% weight loss temperature is 500°C. 10% weight loss temperature is 508°C. The weight loss over 500°C is caused by decomposition of polymer.

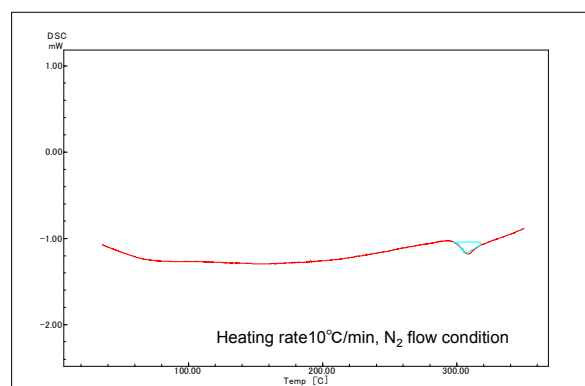


Figure 1 DSC measurement of L-3430

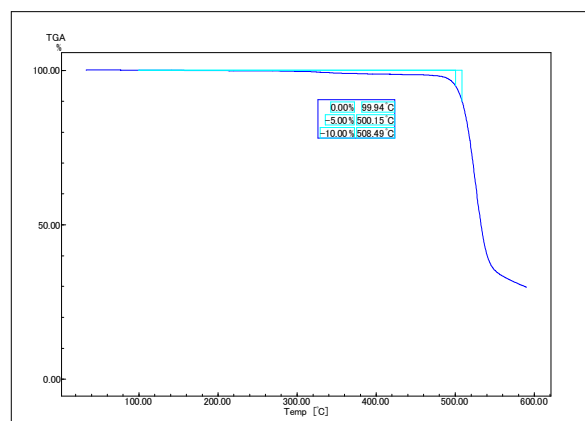


Figure 2 Thermogravimetric analysis of L-3430

## CONCLUSION

MGC has developed new transparent polyimide film. Neopulim L-3430 is a heatproof colorless transparency film, and suitably for the substrate of an electronic device for which the high temperature process over 200°C is necessary.

## REFERENCES

- [1] Nippon Polyimide Society, *Saishin Polyimide*, NTS Inc., 2002, ch. 1, pp. 4-5.