

PMMA/BDK/MR BDK/MR

(2009 /4 /13 2008 / 6 /24)

BDK/MR

MR

BDK/MR

.PMMA/BDK/MR

(Benzyl dimethyl Ketal)

BDK

(Azo – dye)

(Azo – dye)

PMMA/BDK/MR

BDK

(Poly methyl methacrylate)

PMMA

(Benzyl dimethyl ketal)

BDK/MR

PMMA/BDK/MR

BDK/MR

PMMA/BDK/MR

The Effect of Humidity on the Optical Storage BDK/MR and PMMA/BDK/MR Systems Using the Spectroscopic Eillpsometry

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ABSTRACT

The effect of humidity on the two optical storage systems PMMA/BDK/MR, BDK / MR has been studied by preparing the system of BDK/MR from the Azo – dye of the methyl red (MR) and it is mixed with benzyl dimethyl ketal (BDK) in certain rates of size. But the other system PMMA/BDK/MR has been prepared from the Azo – dye of methyl red (MR) doped with poly methyl methacylate (PMMA) benzyl dimethyl ketal (BDK) and was used as a photoinitiartor at certain rates of size. The effect of humidity has been studied by using device of spectroscopical Eillpsometry which has different angles on the two systems of optical storage, and its become clear that the effect of humidity on the system BDK/MR is greater than that of PMMA/BDK/MR. From this we conclude that the thin films which were prepared from PMMA / BDK / MR system are better than those of the BDK/MR system and adding these information to the programming library for spectroscopical device .

Keywords: Effect of Humidity, Thin films, Programming library, Spectroscopical device

MR

(Poly Methyl Methacylate) PMMA

(Methyl Red)

(Benzil Dimethyl Ketal) BDK

(Gang *et al.*, 1991)

MR

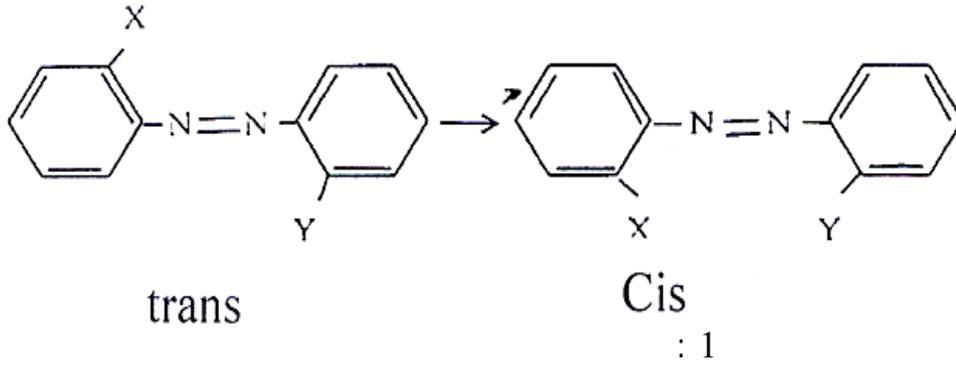
BDK

Photoizomerizotion

trans \rightleftharpoons cis

.1

.....PMMA/BDK/MR BDK/MR



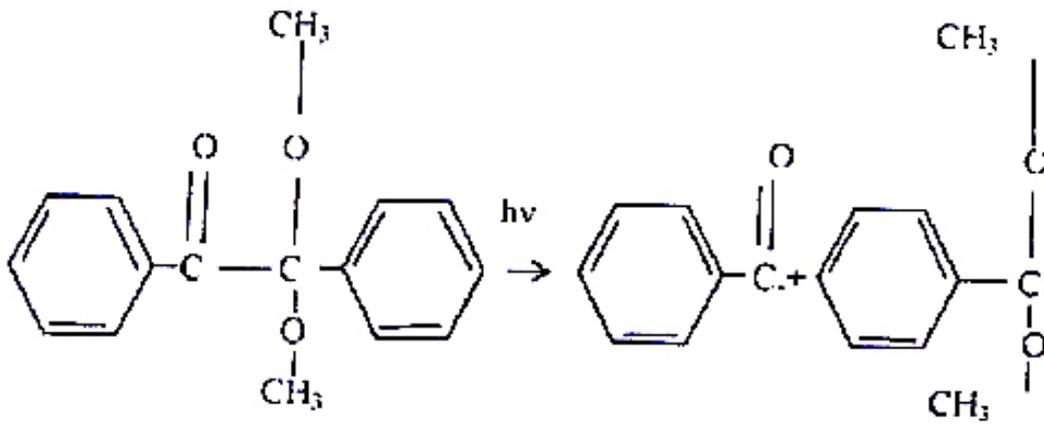
$(10^{-2} - 10^{-3})$

(Pham *et al.* (a), 1995)

Holography

(AL - Attar *et al.*, 2003)

. 2



BDK : 2

PMMA

(Day *et al.*, 2001)

MR

BDK / MR

50 ml.

0.5 g

50 ml.

0.5 g

BDK

(3BDK: 1MR)

BDK / MR

Spin)

) . (Casting

.(

. 44 %

(Variable Angle Spectroscopic Eillipsometry) (V. A. S. E.)

(65, 70, 75)

(250 – 1000) nm

(Fitting)

(Tompkins, 1999) (Azzam and Bashara, 1977) (un polarized)

(Sample) (polarized)

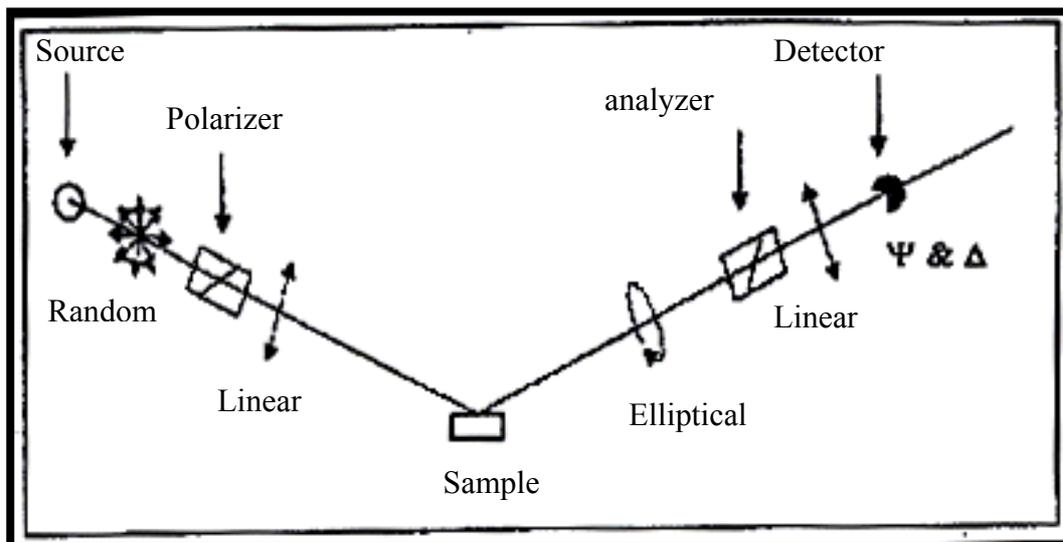
(Elliptic)

(Detector)

(Analyzer)

. 3

Δ Ψ



: 3

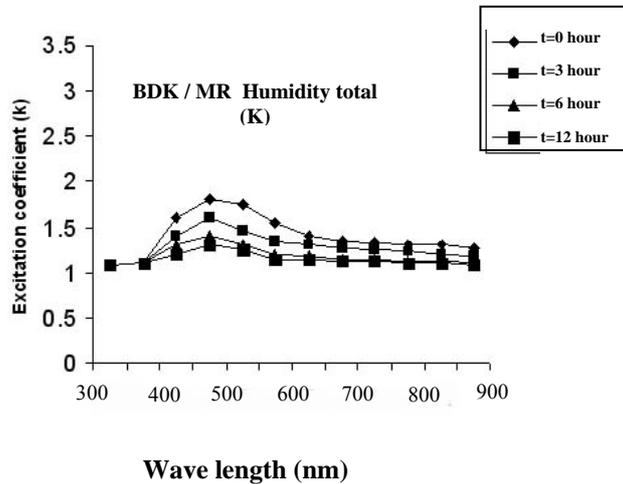
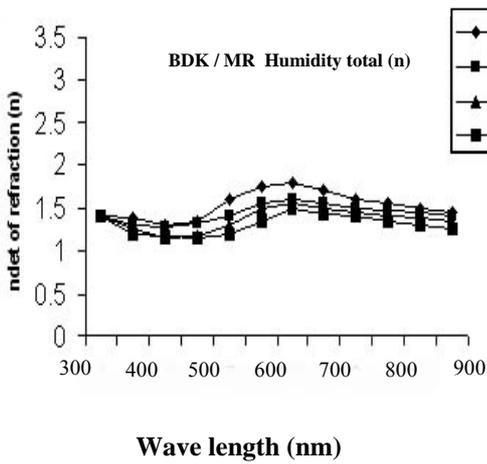
$$\tilde{\rho} = \frac{\tilde{R}_p}{\tilde{R}_s} \dots \dots \dots (1)$$

$$\tilde{\rho} = \tan \psi \exp(i\Delta) \dots \dots \dots (2)$$

(Elman, 1998)

. 4

5 %



BDK/MR k n : 4

MR PMMA/BDK/MR :
50 ml. 0.5 g

50 ml.

0.5 g

BDK

0.5 g

PMMA

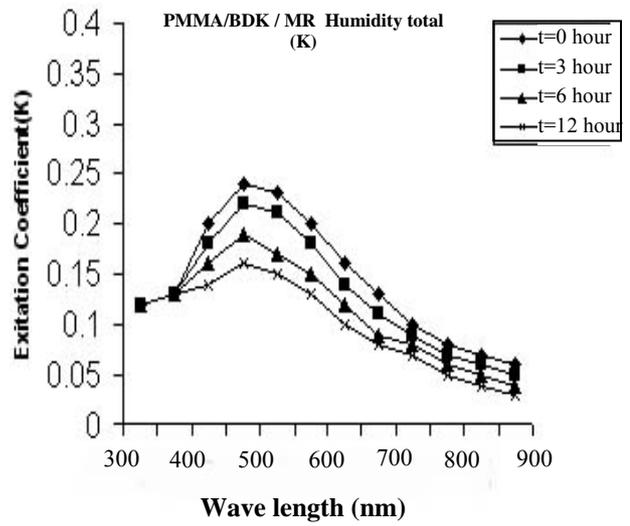
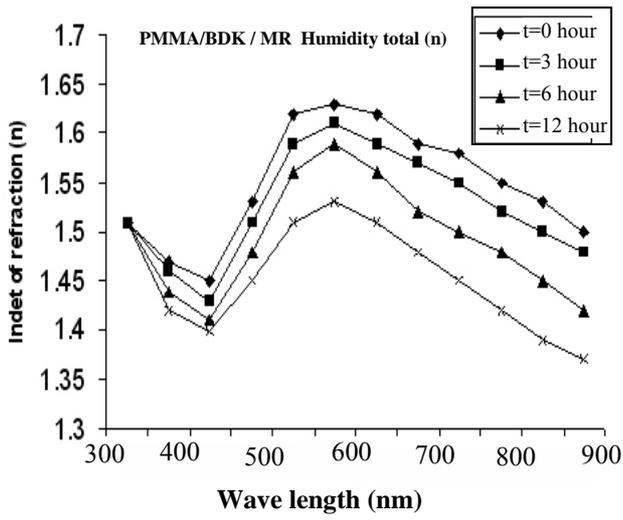
50 ml.

.(3PMMA: 3BDK: 1MR)

PMMA/BDK/MR

PMMA/BDK/MR

. 5



MMA/BDK/MR

k

n

: 5

BDK/MR

$\Delta k=0.5$

$\Delta n=0.3$

(4)

(380-600) nm

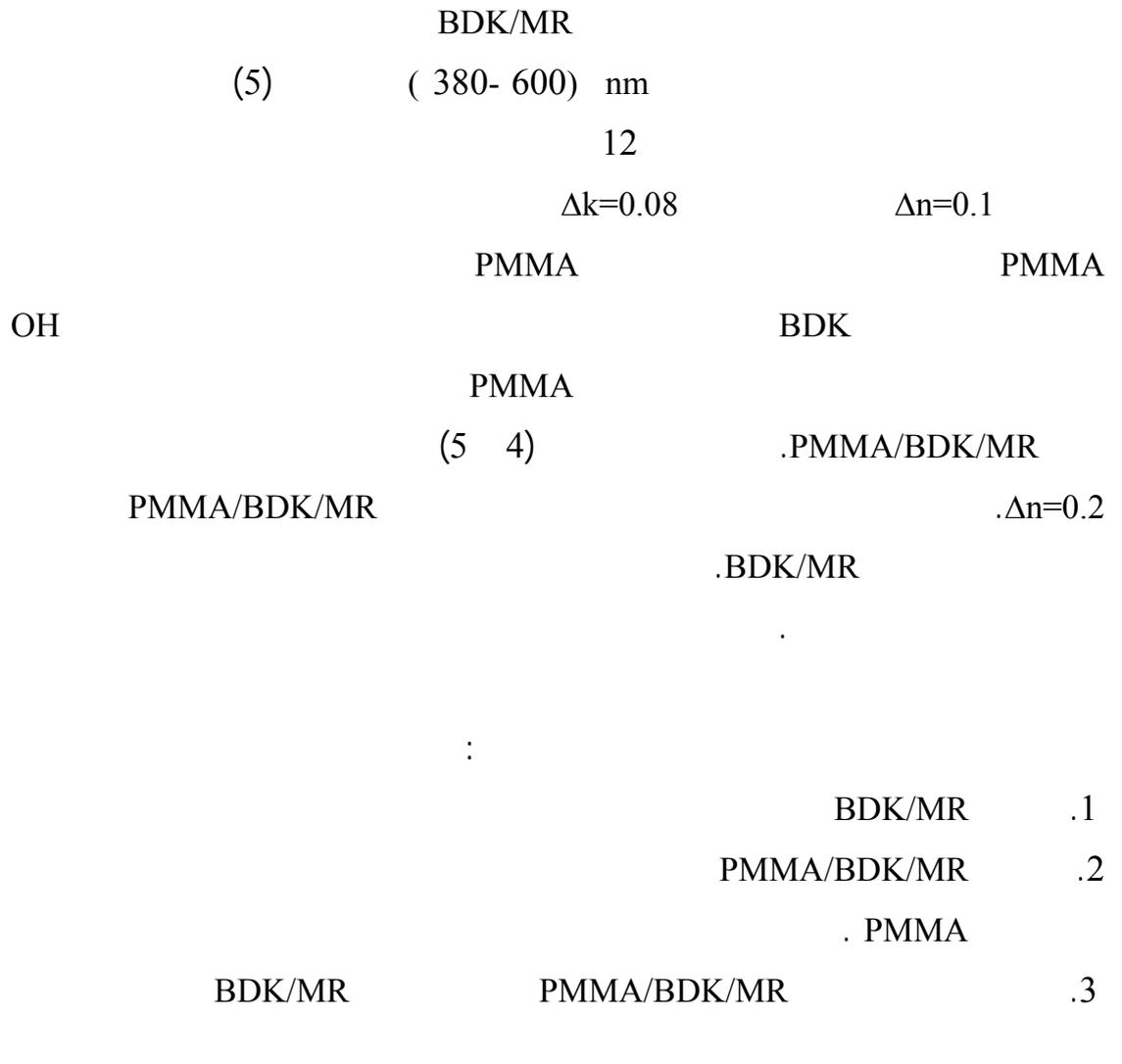
BDK/MR

hygroscopic

PMMA/BDK/MR

(5)

.....PMMA/BDK/MR BDK/MR



MMA/BDK/Azo

.(2005)

.38 -11

- dye

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