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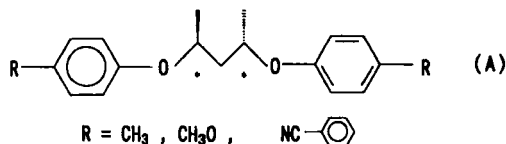
# Novel Chiral Dopants From Optically Active 2,4-Pentanediol (II)

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A variety of chiral dopants from optically active 2,4-pentanediol were prepared



The temperature coefficient of the induced cholesteric pitch of compound(A) was measured to show that  $dP/dT$  depended on substituent group R. When  $R=CH_3$  and  $CH_3O$ , compounds(A) shows positive  $dP/dT$ . But when  $R=Benzonitrile$  group, compound(A) shows negative  $dP/dT$ .

**Keywords:** chiral dopant; optically active 2,4-pentanediol; helical pitch

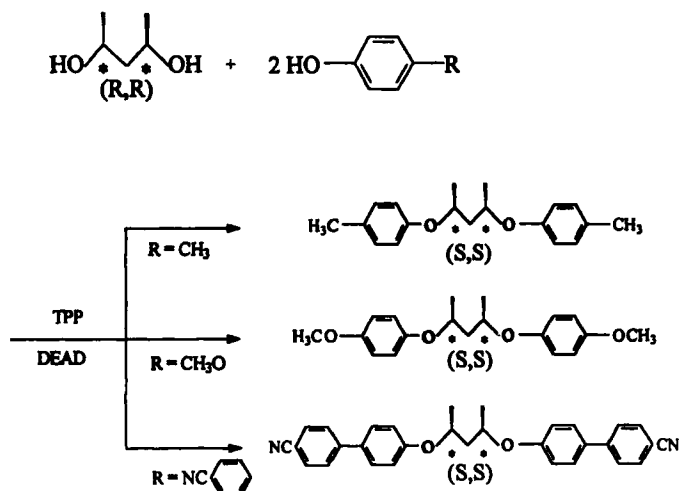
## INTRODUCTION

It is well known that the temperature coefficient of an induced cholesteric pitch can be controlled by blending of a chiral dopant having right-handed and left-handed twist.<sup>1)</sup> The temperature coefficient was also controlled by adding a chiral dopant having negative or positive  $dP/dT$  with the same twist.<sup>2)</sup>

We report the  $dP/dT$  of compounds(A) from optically active 2,4-pentanediol.

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These compounds were prepared from corresponding phenols and optically active 2,4-pentanediol by one-pot reaction (Scheme I) and showed a useful short helical pitch (Table II) for STN and phase transition mode liquid crystal mixtures.



SCHEME I

TABLE I Chemical structures of chiral dopants

No	Chemical structures
1	
2	
3	

TABLE II Induced cholesteric pitch and configuration

<i>No</i>	$\times$	<i>Y</i>	$P_{30}(\mu m)$	$P_{60}/P_{30}$
1	S.S	L	10.3	1.25
2	S.S	L	6.6	1.20
3	S.S	L	7.8	0.95

X: Absolute configuration. Y: Twist sense.

$P_{30}$ : Induced cholesteric pitch of ZLI-1565 with 1% chiral dopant at 30°C.

As shown in Table II, the relationship between the temperature coefficient and the substituent group of compound(A) are as follows:  $\text{CH}_3$  and  $\text{CH}_3\text{O} > 0$ , Benzonitrile group  $< 0$ .

Moreover the relationship between an induced cholesteric pitch and the substituent group of compound (A) are:  $\text{CH}_3 > \text{Benzonitril group} > \text{CH}_3\text{O}$ .

It can, therefore, be said that selection of the substituent group of compound(A) determined what the temperature coefficient and induced cholesteric pitch will be.

## References

1. Jpn. Kokai 80-38869.
2. Mol. Cryst. Liq. Cryst., 1993, Vol. 237, pp 483-485.