



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification 4<sup>+</sup>:</b> <b>C07C 69/76, C09K 19/12, 19/20</b> <b>C09K 19/30</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 87/ 04705</b> <b>(43) International Publication Date:</b> 13 August 1987 (13.08.87)
<b>(21) International Application Number:</b> PCT/GB87/00058 <b>(22) International Filing Date:</b> 28 January 1987 (28.01.87) <b>(31) Priority Application Number:</b> 8602168 <b>(32) Priority Date:</b> 29 January 1986 (29.01.86) <b>(33) Priority Country:</b> GB <b>(71) Applicants (for all designated States except US):</b> THE SECRETARY OF STATE FOR DEFENCE IN HER BRITANNIC MAJESTY'S GOVERNMENT OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND [GB/GB]; Whitehall, London WC1A 2HB (GB). STC PLC [GB/GB]; 10 Maltravers Street, London WC2P SHA (GB). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only) :</b> GRAY, George, William [GB/GB]; "Glenwood", Newgate Street, Cottingham, North Humberside HU16 4DY (GB). LACEY, David [GB/GB]; 19 Kildale Close, Hull, North Humberside HU8 9NW (GB). TOYNE, Kenneth, Johnson [GB/GB]; 25 Hall Road, Hull, North Humberside HU6 8QW (GB). COATES, David [GB/GB]; 12 Blackbushe, Bishop's Stortford, Hertfordshire CM23 5EP (GB). JACKSON, Adam [GB/GB]; 10 de la Pole Avenue, Anlaby Road, Hull,	North Humberside HU3 6QT (GB). SCROWSTON, Richard, Michael [GB/GB]; 11 Saunders Croft, Walkington, Beverley, North Humberside HU17 8TG (GB). <b>(74) Agent:</b> BECKHAM, Robert, William; Procurement Executive, Ministry of Defence, Patents 1A(4), Room 2014, Empress State Building, Lillie Road, London SW6 1TR (GB). <b>(81) Designated States:</b> AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US. <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <b>(88) Date of publication of the international search report:</b> 5 November 1987 (05.11.87)	
<b>(54) Title:</b> LIQUID CRYSTAL COMPOUNDS CONTAINING TWO OR MORE CHIRAL CENTERS		
<b>(57) Abstract</b> <p>Novel compounds suitable for use as components of a ferroelectric smectic liquid crystal composition, which contain two or more chiral centers derived from optically active alpha-hydroxy carboxylic acids, secondary alcohols, and terpenoid alcohols. These units are combined with a mesogenic combination of cyclic groups. Preferred compounds contain two or more lactate groups, lactate and 2-octyl groups, or lactate and terpenoid groups in combination with phenyl groups. Ferroelectric smectic liquid compositions containing these compounds, and a device using them are also described.</p>		

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# INTERNATIONAL SEARCH REPORT

International Application No **PCT/GB 87/00058**

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC <sup>4</sup> : <b>C 07 C 69/76; C 09 K 19/12; C 09 K 19/20; C 09 K 19/30</b>		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC <sup>4</sup>	C 07 C 69/00 C 09 K 19/00	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>9</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
Y	EP, A, 0138006 (MERCK PATENT GmbH) 24 April 1985 see claims	1-12
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P,Y	WO, A, 86/02938 (THE SECRETARY OF STATE FOR DEFENCE) 22 May 1986 see claims	1-12
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<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
28th August 1987	6 OCT 1987	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	L. ROSSI	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/GB 87/00058 (SA 15948)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 15/09/87.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0138006	24/04/85	DE-A- 3333677	04/04/85
		JP-A- 60099191	03/06/85
		US-A- 4650600	17/03/87
WO-A- 8602938	22/05/86	WO-A- 8602937	22/05/86
		GB-A- 2166754	14/05/86
		EP-A- 0201554	20/11/86
		EP-A- 0201578	20/11/86
		JP-T- 62501700	09/07/87
		JP-T- 62501714	09/07/87

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