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Blends from redox active liquid crystal ionomers and amorphous ionomers

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ERRATUM

Blends from redox active liquid crystal ionomers and amorphous ionomers

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Figure 4 of the above paper was inadvertently turned by 180° during the final printing process. The figure is reproduced overleaf in its correct form and the relevant text and table are shown below.

In all blends prepared from reduced and oxidized liquid crystalline polymers (LCP) with polystyrene and partially sulphonated polystyrene (see the table), the glass transition of the LCP (T_{g1}) and the phase transition smectic A to nematic and nematic to isotropic of the LCPs occur at nearly the same temperatures as for the pure LCPs. The DSC curves exhibit also the glass transition of pure polystyrene and pure partially sulphonated polystyrene (T_{g2}). For miscible blends a single composition-dependent glass transition would be expected whereas biphasic blends show the two characteristic glass transitions of the pure components. Thus, the observed thermal behaviour of the four polymer mixtures proves, that all of them are completely phase separated, independent of the fact that ionic interactions between the blend components are possible (see blend IV in the table) or not (blend I). In contrast to the similar thermal behaviour, the optical micrographs of the four blends (see figure 4 (*a*)–(*d*)) show that the blend consisting of two ionomeric components exhibits no phase separation on a macroscopic scale, whereas all other combinations show a coarse phase separation. Figure 4 (*d*) shows a homogeneous texture which looks similar to the texture of the pure polymer **1b**. The results from the DSC measurements and polarizing microscopy lead to the conclusion, that mixing ionomeric LCP **1b** with the amorphous ionomer **2b** induces a microphase separation, the super-structure of which allows a macroscopically uniform alignment of the director.

Assignment of the blends I–IV (50% mixtures of the constituents).

	Polystyrene **2a**	Sulphonated polystyrene **2b**
LC polymer **1a**	Blend I g_1 309 K S_A 343 K N (g_2 363 K) 373 K I	Blend III g_1 306 K S_A 344 K N 372 K I (g_2 374 K)
LC ionomer **1b**	Blend II g_1 310 K S_A 350 K N (g_2 370 K) 379 K I	Blend IV g_1 310 K S_A 352 K N (g_2 376 K) 382 K I

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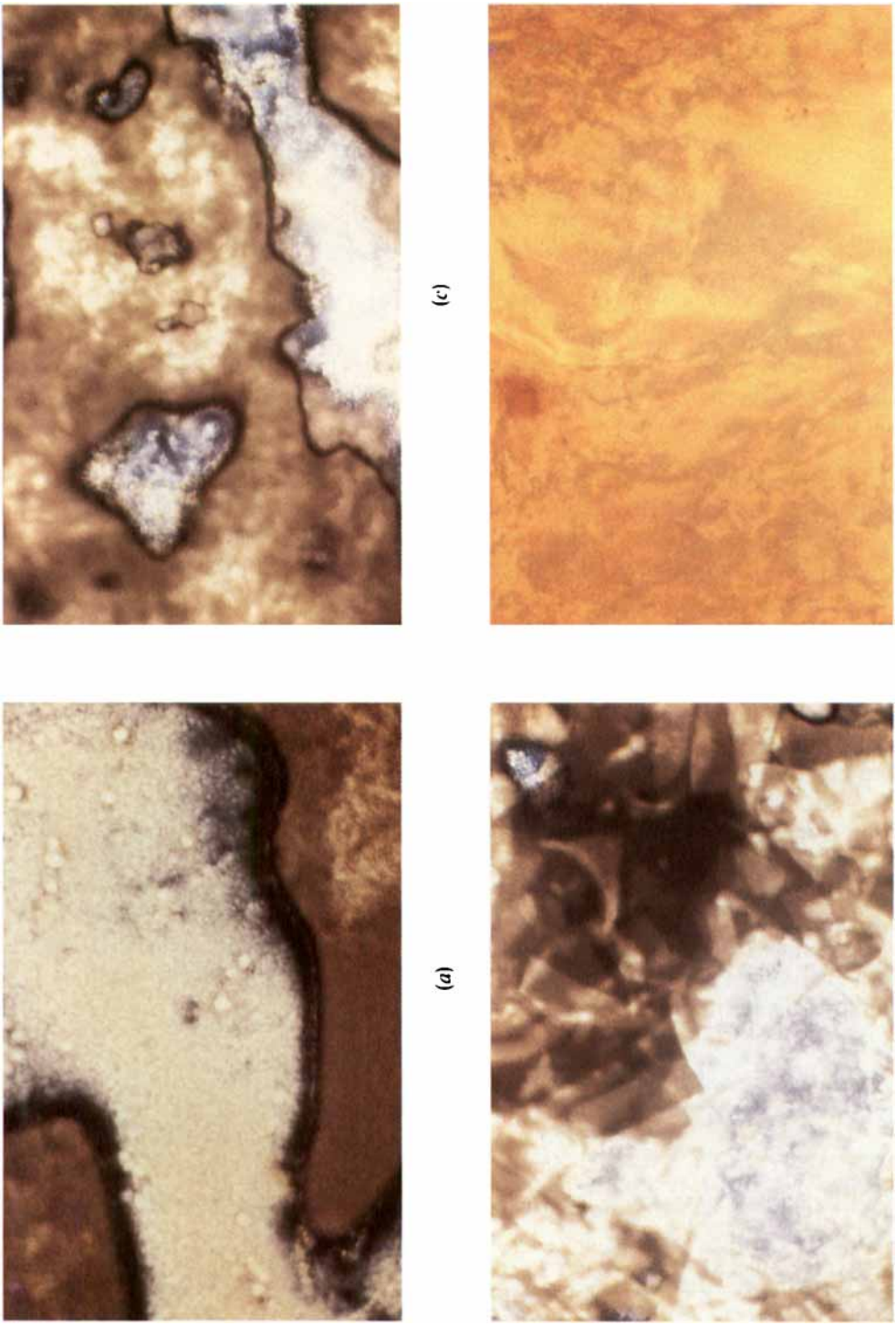

Figure 4. Optical micrographs obtained by polarizing microscopy, crossed polarizers, temperature: 70°C. (*a*) Blend I, (*b*) blend II, (*c*) blend III, (*d*) blend IV.