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It may be helpful to both industrialists and academics to make some points about these important concepts. A *strategic alliance* between the active industries would be advantageous for many reasons. For example it allows the patent and licensing issues to be settled, the reduction of production costs and the product price, the improvement of performance, the development of new products and application, the expansion of the market and above all, the verticalization of the technology to facilitate its transformation to end-users. The concept of strategic alliance is being pursued by some industries, where the film suppliers and end-users are attempting to consolidate a coherent effort to expand the future market of PDLC for the architectural windows applications.

Despite the inevitable needs for product improvement, the history of PDLC technology has shown that the product flexibility and diversification is another key issue for market acceptance of the PDLC product. Consequently, the 'single-product' approach is an inadequate development strategy pursued by many industries. In other words, the concept of 'PDLC for all seasons' is proven to be an unsuccessful product strategy. In this respect, some industries are beginning to realize and implement the 'multi-product' strategy to overcome this shortcoming. A capability and flexibility for product development and fine-tuning for different applications would allow the PDLC industries access to vast and far-reaching applications and end-use markets.

Last but not least, the *plastic* PDLC technology for large-area applications has been solely developed in

industry, almost without academic participation. The short history of PDLC reveals that, while the industries have been struggling to develop plastic PDLC for large-area applications, the basic research has been developing in various areas of displays. The exclusion of academia from research on plastic PDLC is a result of the complex history of this technology and will not be discussed here. It is sufficient to point out that the lack of such vital industrial-academic interactions not only created a divergence of interest and research activities, but has also prevented industries accessing fundamental understanding, and resolving the technical problems impeding technological innovations. Through a framework of active industrial-academic collaboration it would be possible to introduce the *plastic* PDLC technology into the main stream of basic research and, in return, to resolve the existing problems, efficiently and cost effectively. Such collaborations will provide far-reaching opportunities for future innovations in industrial development of this technology.

In conclusion, we believe that the current impasse in *plastic* PDLC technology is only a temporary one. There are already indications that industries are making substantial revisions of their development strategies. Such revisions incorporate the concepts of alliance, multi-product approach and academic collaborations. In this way, not only the progress of *plastic* PDLC will be guaranteed, but also there will be ample opportunities for development of liquid crystal film technologies as a whole, in other areas of innovation and device application.

PRODUCT NEWS

Free On-Line Access for LiqCryst Database

The database LiqCryst is now open to public access via LiqCryst Online. It gives access to more than 70 000 structures and LC registration numbers. Furthermore the 5000 most common compounds are displayed with all physical data.

LiqCryst Online is a subset of LiqCryst 3.0, and has a substructure search (connectivity, line notations, SMILES string), reference and abbreviation searches, but as yet no analysis function for data. LiqCryst Online gives free access to the structure of known liquid crystals, and its purpose is to encourage the use of LC registration numbers for documentation and reference, and to link information in the internet via hyperlinks. LiqCryst Online covers the following:

- LCD display materials
- thermotropic surfactants
- metallomesogens
- polymers
- NLO compounds with mesogenic structures

The in-house database LiqCryst 3.1 has further data with enhanced search and manipulation functions on around 75 000 compounds and about 200 000 properties. The data have been extracted from journals, patents, dissertations, conference abstracts and books.

Further information and access to the database is available at:

<http://liqcryst.chemie.uni-hamburg.de>