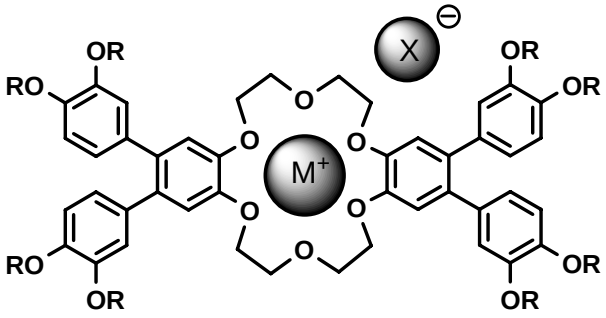
Salt effects on the phase behaviour of crown ethers: liquid crystals on demand

S. Laschat[a], M. Kaller[a], N. Steinke[a], S. Tussetschläger[a], F. Giesselmann[b], M. Lehmann[c]

a Institut für Organische Chemie, Universität Stuttgart, Pfaffenwaldring 55, D-70569 Stuttgart, Germany, sabine.laschat@oc.uni-stuttgart.de
b Institut für Physikalische Chemie, Universität Stuttgart, Pfaffenwaldring 55, D-70569 Stuttgart, Germany
c Institut für Chemie, Technische Universität Chemnitz, Straße der Nationen 62, D-0911 Chemnitz, Germany

The development of stimuli responsive materials, whose structures and physical properties can be changed to a remarkable extend upon chemical or physical stimuli have received increasing interest among material chemists. We have found that the mesomorphic properties, i.e. phase type (smectic or columnar) and stability of crown ether derivatives such as *o*-terphenyl-substituted benzo[15]crown-5 and dibenzo[18]crown-6 derivatives are strongly influenced, by salt effects (1), (2), (3). In some cases the influence of the metal salt on the mesophase is more pronounced as compared to the influence of the peripheral groups and side chains, resulting in the induction of mesophases in non-mesomorphic materials by addition of salts. NMR spectroscopy and MALDI-TOF are sensitive probes to study the complexation.



References
(1) N. Steinke, W. Frey, A. Baro, S. Laschat, C. Drees, M. Nimtz, C. Hägele, F. Giesselmann, *Chem. Eur. J.* **2006**, *12*, 1026-1035.
(2) N. Steinke, M. Jahr, M. Lehmann, A. Baro, W. Frey, S. Tussetschläger, S. Sauer, S. Laschat, *J. Mater. Chem.* **2009**, *19*, 645-654.
(3) A. Schultz, S. Laschat, A. Saipa, F. Gießelmann, M. Nimtz, J. L. Schulte, A. Baro, B. Miehlich, *Adv. Funct. Mater.* **2004**, *14*, 163-168.