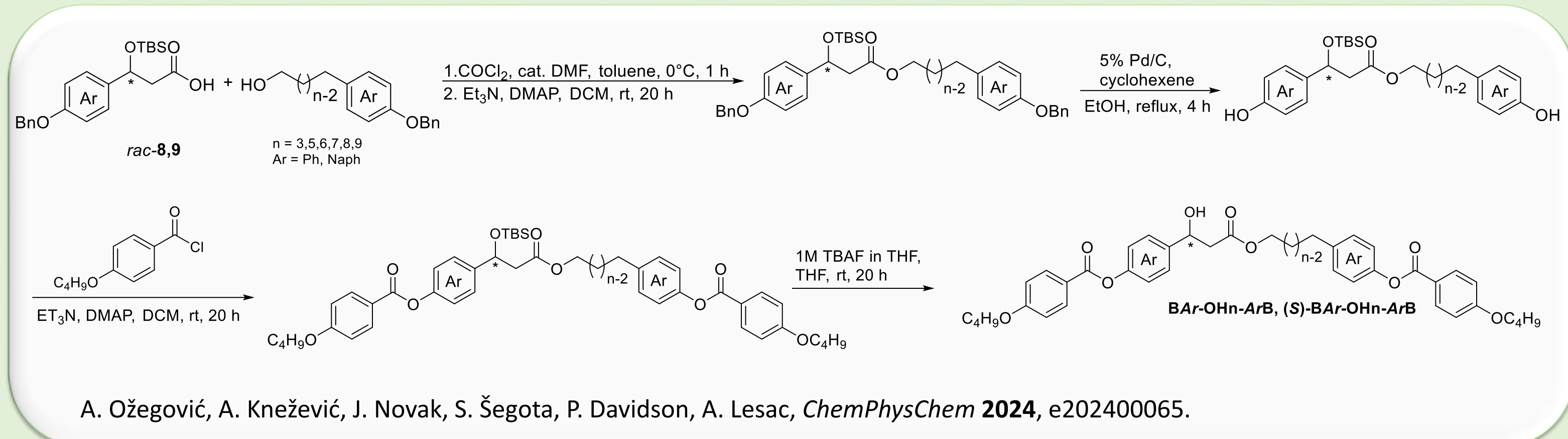
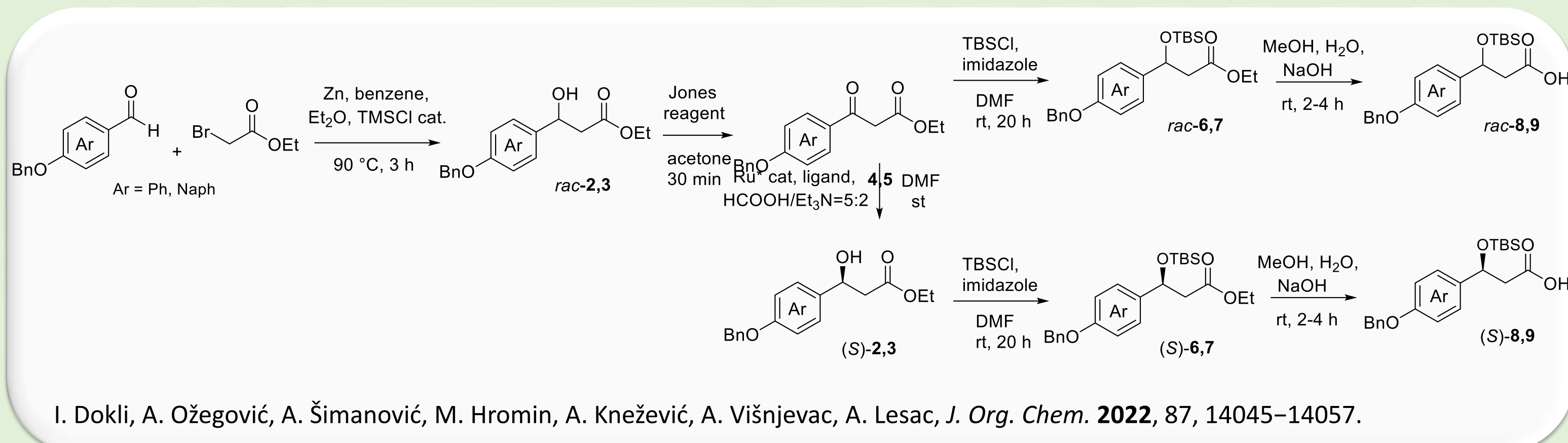


# Chiral Liquid Crystal Dimers: Synthesis, Mesomorphic Properties, and Helical Dynamics

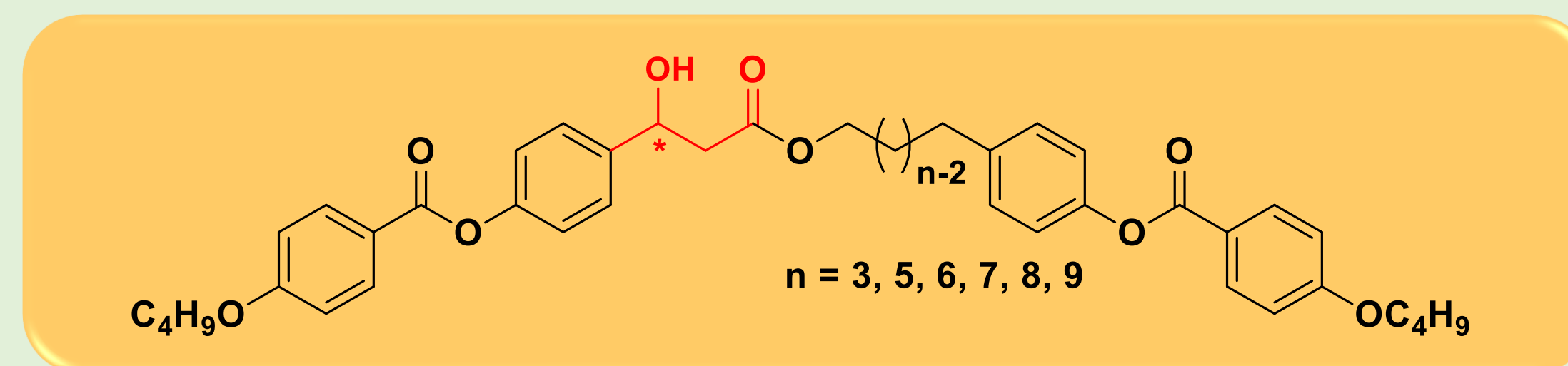
Ožegović, Antonija<sup>1\*</sup>; Knežević, Anamarija<sup>1</sup>; Lesac, Andreja<sup>1</sup>  
<sup>1</sup>Ruder Bošković Institute, Zagreb, Croatia

## Synthesis of racemic and enantiomerically pure 3-aryl-3-hydroxypropanoic acid

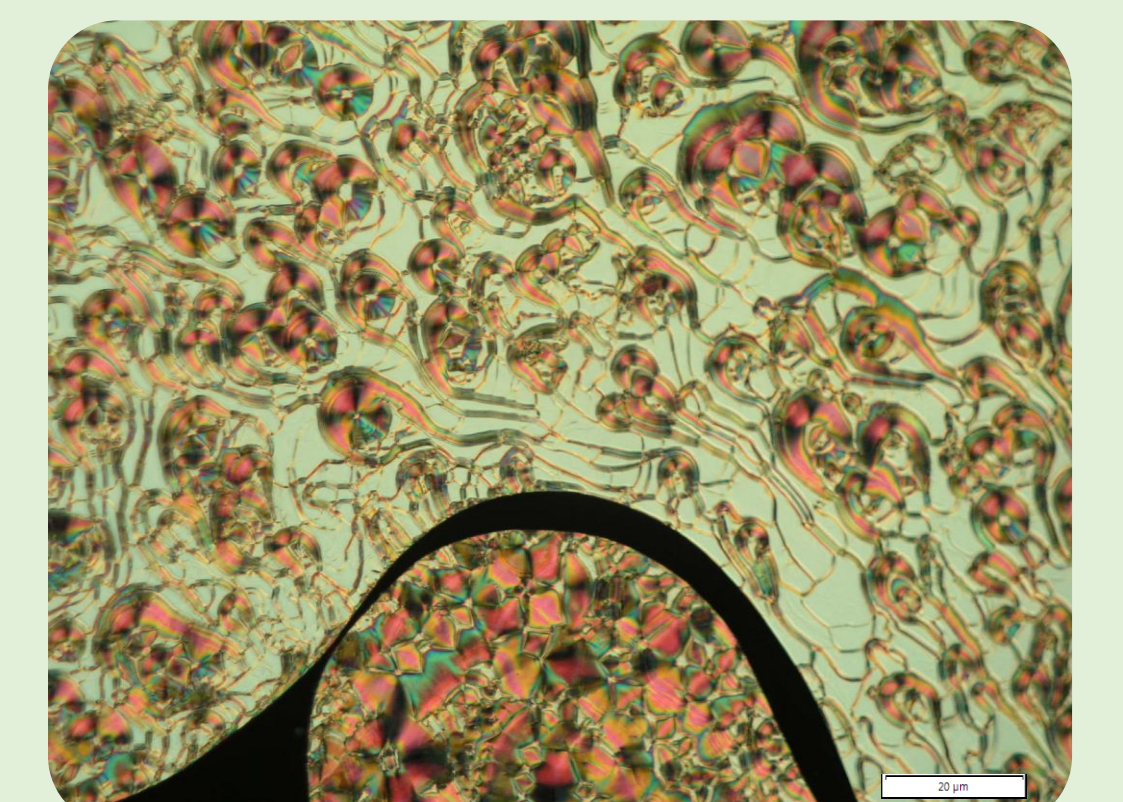
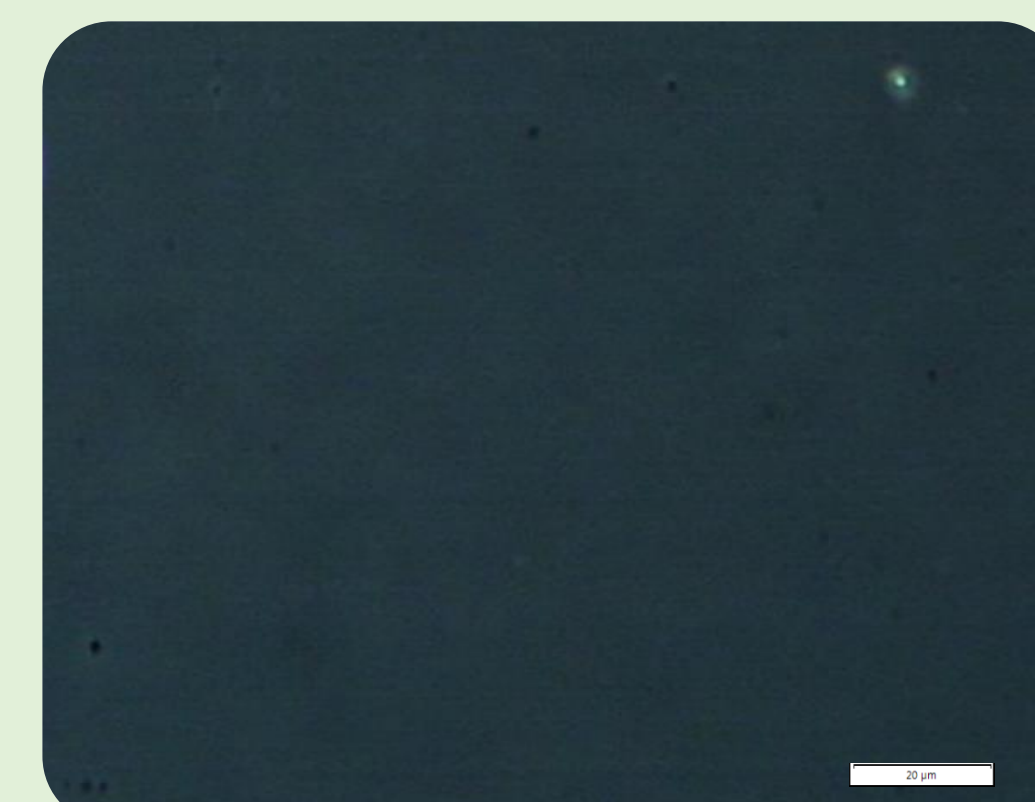
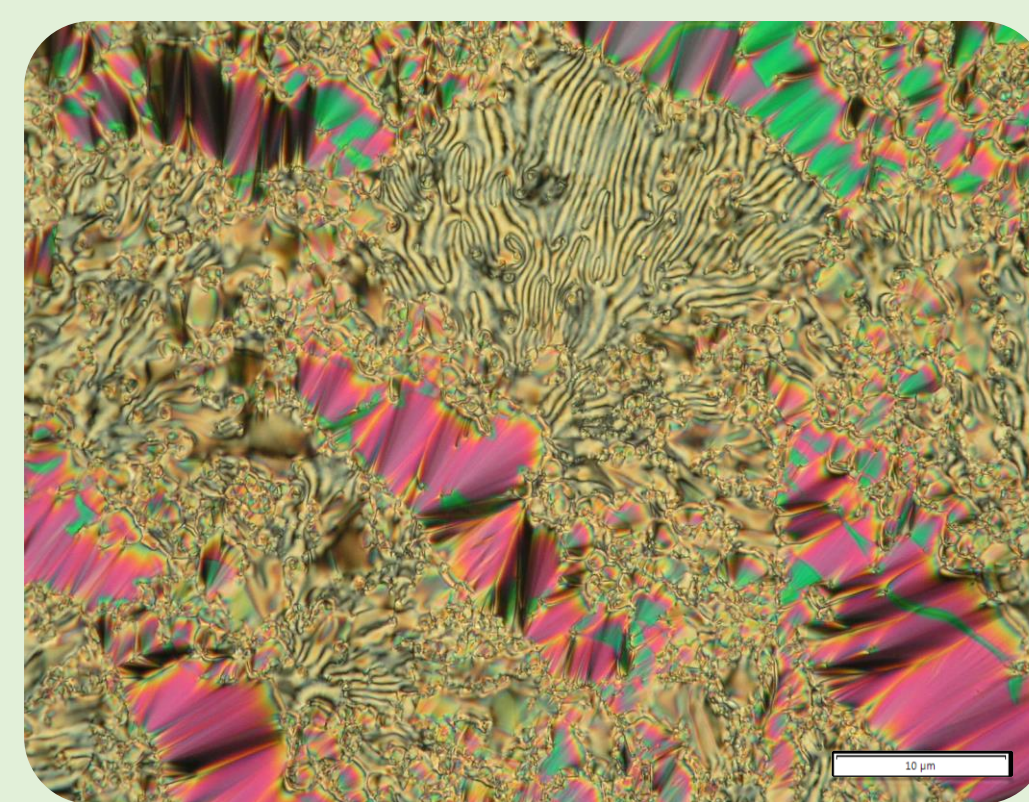
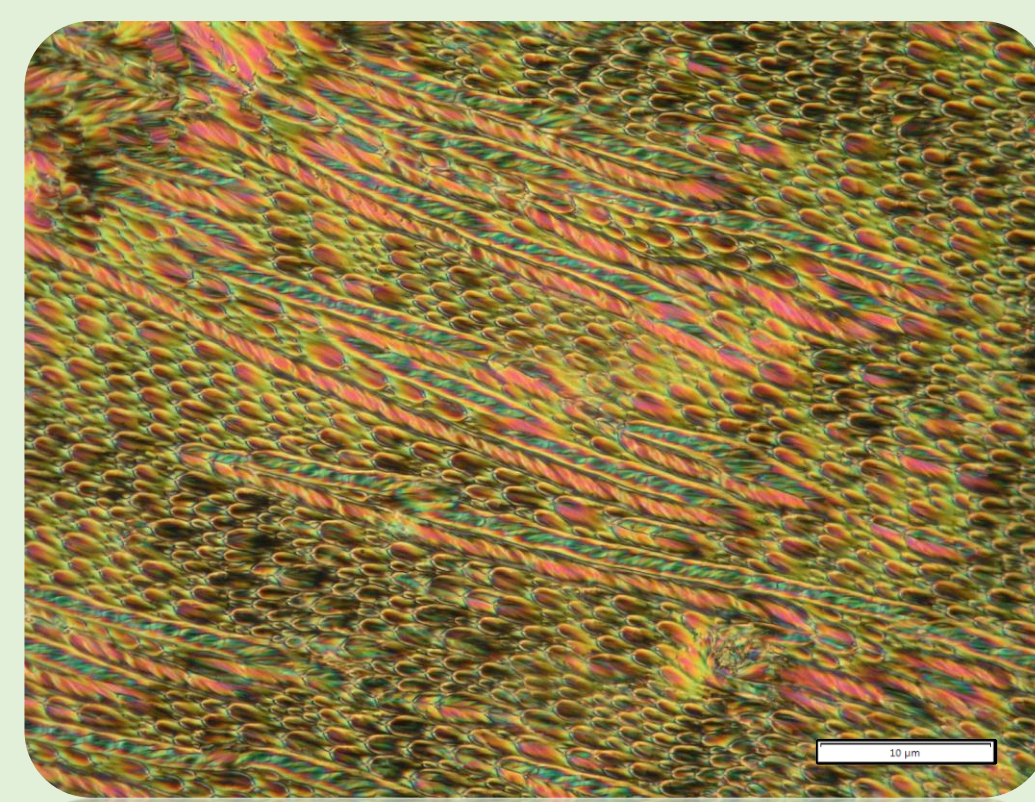
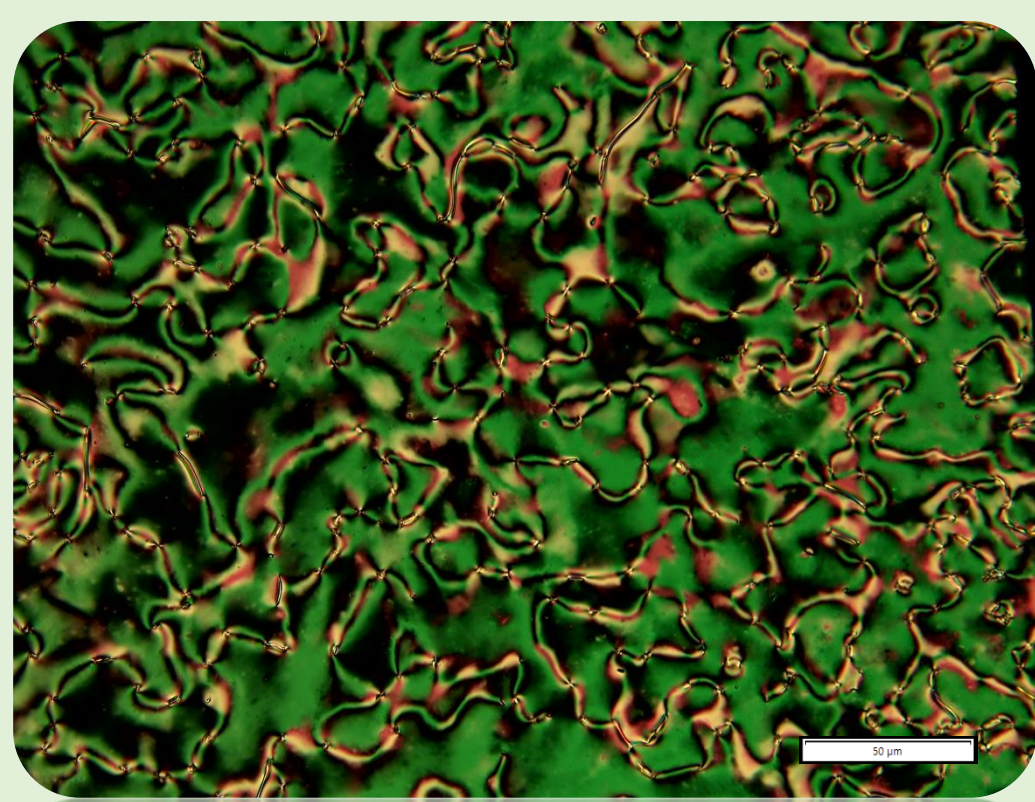
## Synthesis of final compounds



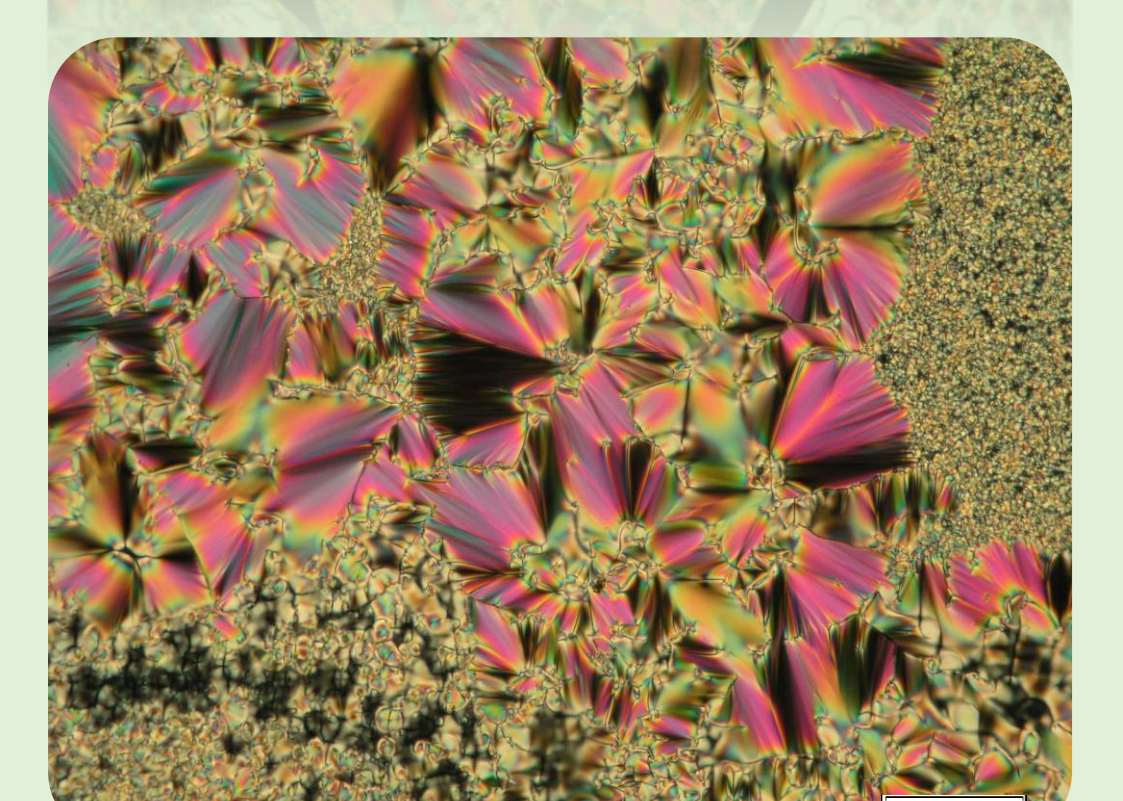
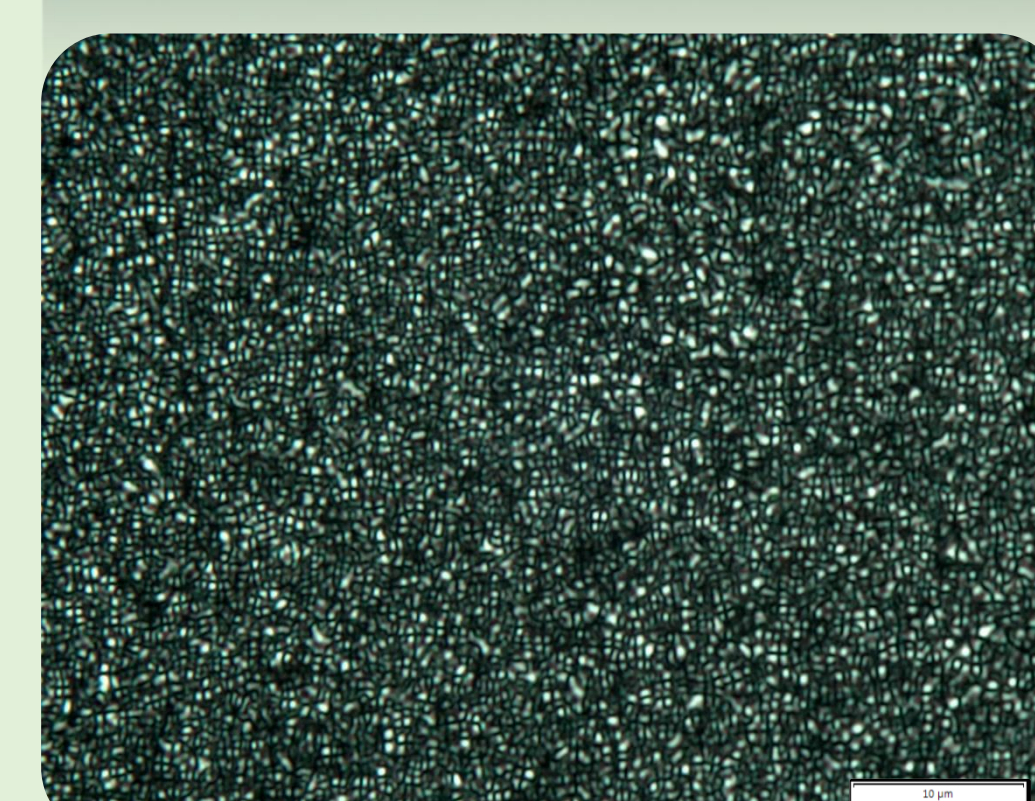
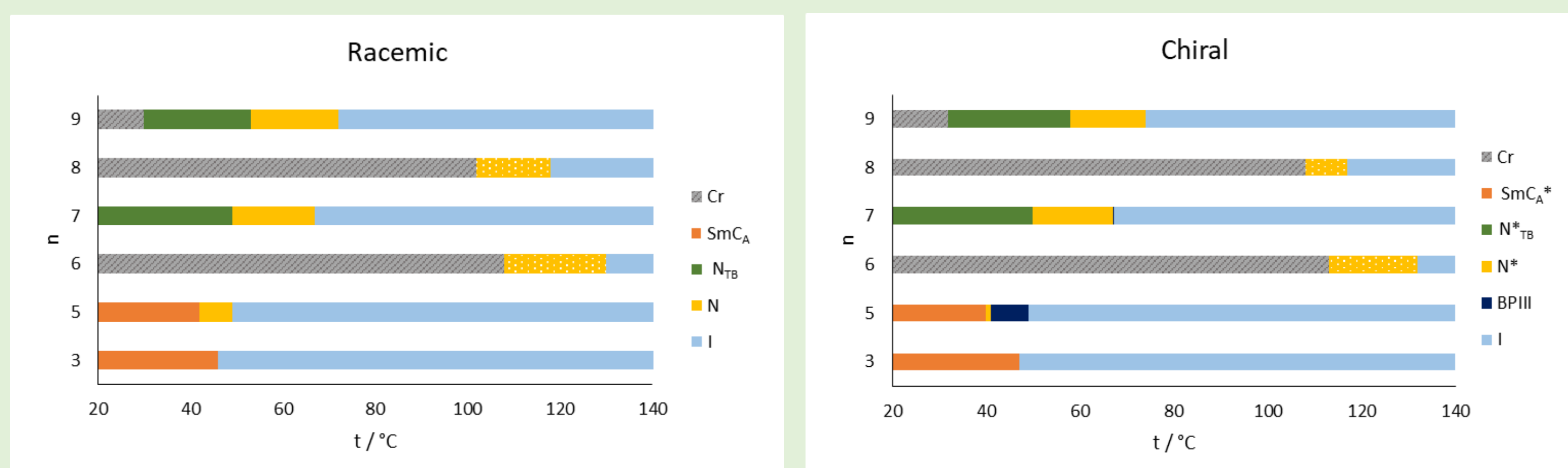
racemic



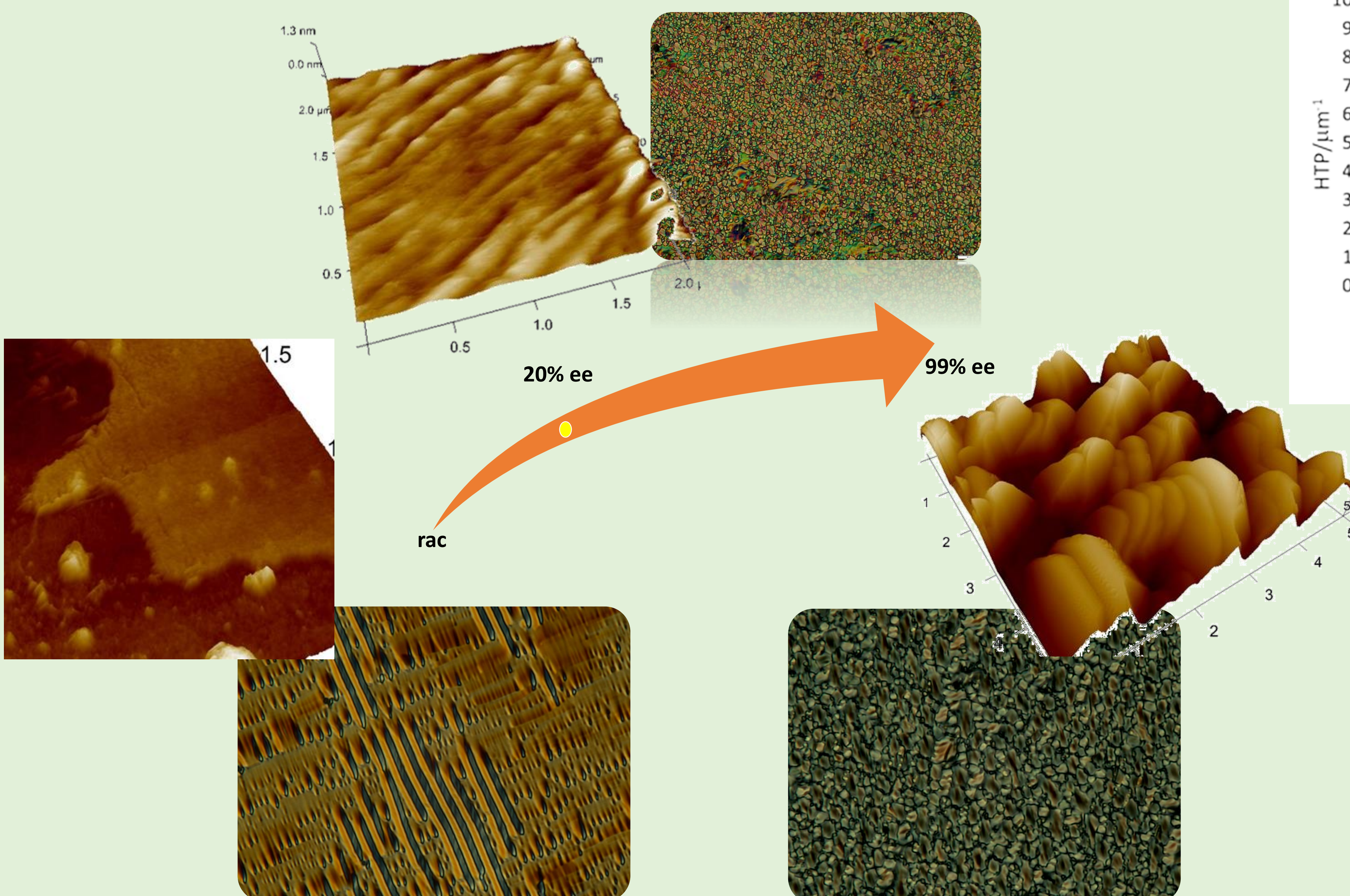
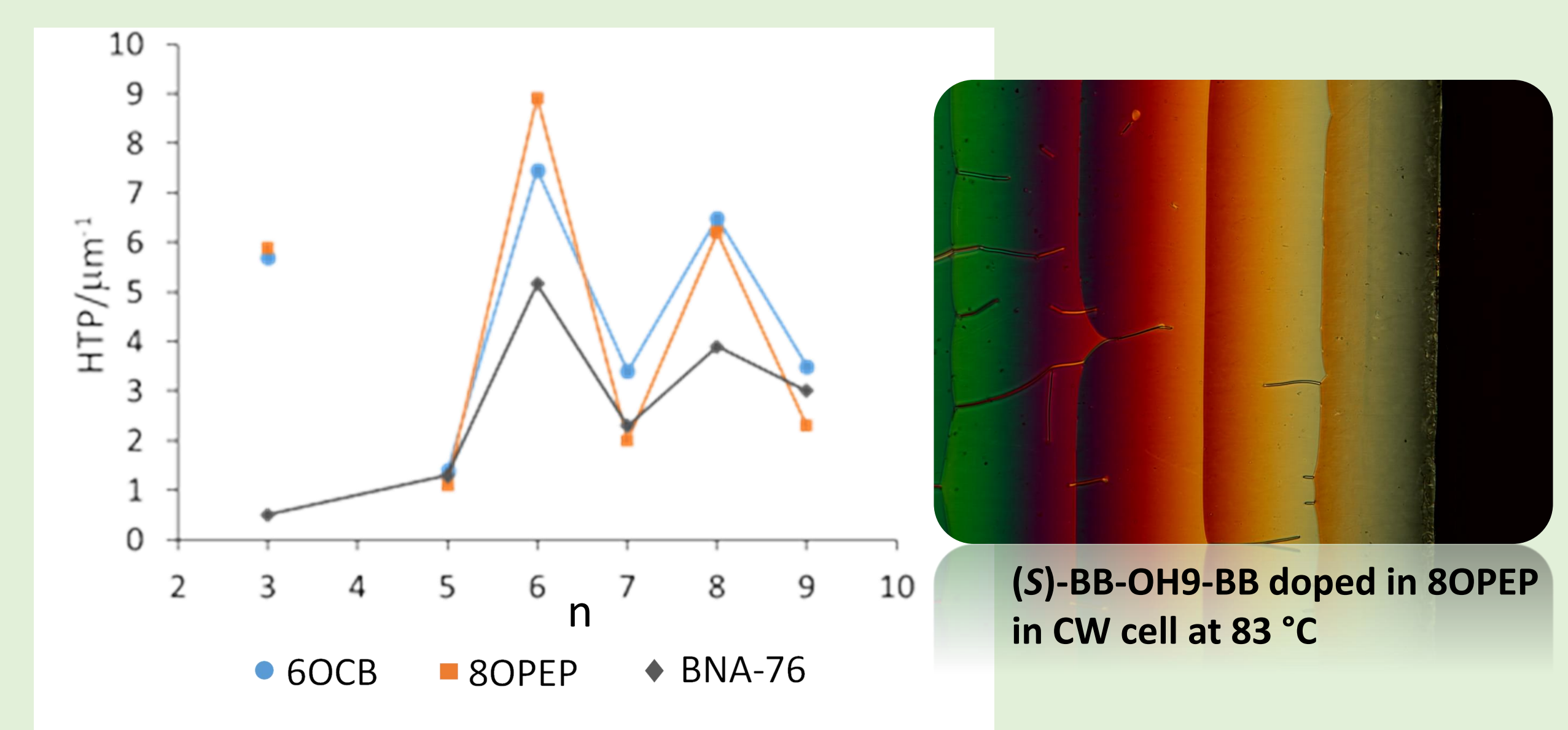
chiral



## Transition temperatures for the synthesized compounds obtained on cooling.



## Dependence of the HTP on the number of methylene units in the spacer of chiral dimer doped in 6OCB, 8OPEP, and BNA-76



## Conclusion

- Both, the racemic and enantiomerically pure dimers show an odd-even effect in mesomorphic behavior: even-membered dimers exhibit only uniaxial nematic (N) or chiral nematic (N\*) phase while odd-membered display rich mesomorphism, including the BPIII and chiral N<sub>TB</sub> (N\*<sub>TB</sub> phase).
- Chiral moiety in the spacer removes the chiral degeneracy of the racemic N<sub>TB</sub> and promotes chiral hierarchy.
- The HTP values of the chiral dimers show notable odd-even effect in three different nematic solvents. That has not been observed for the dimers with chiral terminal chain.

AFM 3D-topographic images of the racemic form of the N<sub>TB</sub> phase and the chiral form (ee 99 %) of the N\*<sub>TB</sub> phase obtained from the planar oriented BB-OH7-BB and (S)-BB-OH7-BB compounds.