Selective NIR-Absorbing Dyes

Significance: Near-infrared (NIR) dyes that do not absorb in the visible range have potential as heat-blocking window coatings, laser-protecting glasses or as antiforgery markers. The authors present the synthesis of a series of NIR-absorbing bis(pyrrolopyrrole) cyanine dyes (4 and 5 as well as derivatives with different side and end groups) that meet these criteria.

Comment: Rigidifying the conjugated system of 4 by introduction of BPh₂ groups (leading to 5) results in a red shift of the absorption maximum by 65 nm as well as in narrowing the absorption bands and in an increase of the extinction coefficient (ε = 277'000 M⁻¹ cm⁻¹ for 4 to ε = 571'000 M⁻¹ cm⁻¹ for 5).