Colorimetric Recognition of Molecular Length in Water
Based on Phenolphthalein Derivatives

Kazunori Tsubaki, Daisuke Tanim, Tomokazu Kusumoto, Kaoru Fuji, and Takeo Kawabata
1) Institute for Chemical Research, Kyoto University, Uji, Kyoto 611-0011, Japan.
2) Faculty of Pharmaceutical Sciences, Hiroshima International University, Kure, Hiroshima 737-0112, Japan.
(tsubaki@fos.kuicr.kyoto-u.ac.jp)

The design and construction of chemosensors for recognizing biologically important small molecules have received considerable attention in recent years. Hydrogen-bonding driven molecular recognition in water still remains as a challenging task, because water molecules act as good donors and acceptors of hydrogen-bonds. Recently, we have reported the ditopic receptor 1 based on phenolphthalein (well-known pH indicator), which showed visual recognition toward diamine systems via hydrogen-bondings and additional strong ionic interactions through formation of bridged-type complex in protic solvents such as methanol.1

Herein we report sequence-selective visualization of non-protected dipeptides in aqueous media by host 12, furthermore the higher-level colorimetric recognition of diamine systems in water by the water-soluble phenolphthalein derivative 2.