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講演会のお知らせ

“Photo(redox)-active and Photo(redox)-switchable Materials: a Journey from Molecular Design to Applications and Self-Aggregated Systems “

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日時：11月　1日(金)　17:15 – 18:30

場所：本館3階理学院第2会議室（本館345）

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Photo(redox)-active and Photo(redox)-switchable Materials: a Journey from Molecular Design to Applications and Self-Aggregated Systems

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The conference will be divided into two parts. The first part will be on original method of electropolymerization of porphyrin based on nucleophilic attack onto the electrogenerated porphyrin radical cation or dications by nucleophile such as 4,4'-bipy or Py-R-Py (Py = pyridine). For instance, the formation of (iso)porphyrin copolymeric films (Fig. 1b) can be obtained by the electro-oxidation of porphyrin in the presence of the hybrid POM bearing two pyridyl groups (Py-POM-Py).[1-2] Using the same methodology, the synthesis of a diarylethene-(iso)porphyrin photoswitchable copolymer has been developed (Fig. 1c). The incorporated diarylethene maintains its reversible photochromism upon the UV-Vis radiation with multiple cycles of ring-opening and closing.[3] A photo-switchable molecular capsule based on Keggin-type POM and diarylethene has been also formed and studied (Fig. 1a). [4]

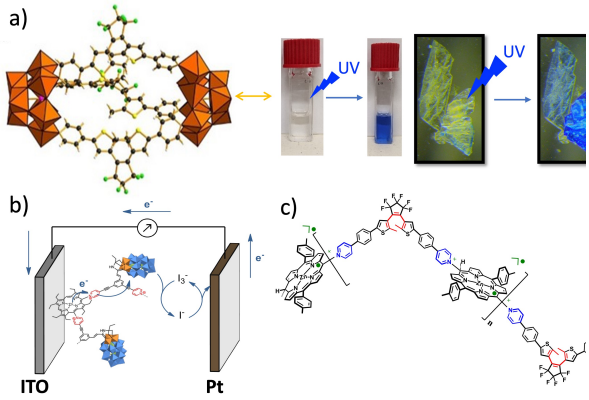

Fig. 1 Various type of photo(redox)-active or photo(electro)switchable systems studied.

In the second part, the photoredox-switchable molecular grippers based on resorcin[4]arene cavitand platforms equipped with alternating quinone (Q) and quinoxaline walls carrying hydrogen bond donating groups will be presented. The semiquinones (SQ) state can be generated electrochemically and photochemically.[5] It was shown that these systems adopt an open conformation in the oxidized Q state until redox interconversion to the paramagnetic SQ radical anion provides the stabilization of the closed form through hydrogen bonding.

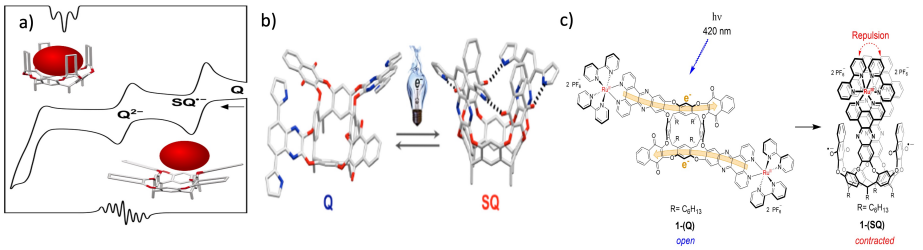

Fig. 2 Photoredox-switchable molecular grippers based on resorcin[4]arene cavitand platforms.

References

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[2] Y. Liang, M. N. Sokolov, M. A. Mikhaylov, H. Ibrahim, M. Goldmann, S. Choua, N. Le Breton, C. Boudon, V. Badets, A. Bonnefont, L. Ruhlmann, 2021, Electrochimica Acta, 2021, **388**, 138493.
[3] Z. Huo, V. Badets, H. Ibrahim, M. Goldmann, H. Xu, T. Yi, C. Boudon, L. Ruhlmann, Eur. J. Org. Chem. 2021, 6636.
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