

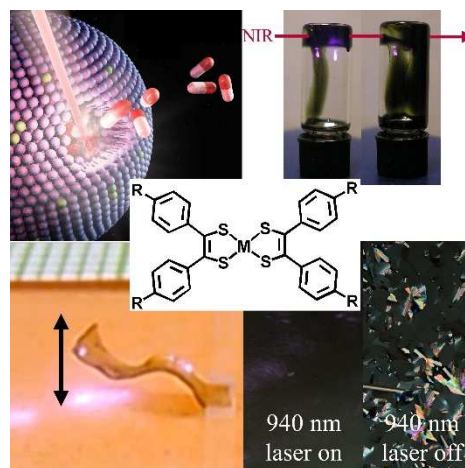
Quantification and applications of the NIR-photothermal properties of nickel-bis(dithiolene) complexes

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Metal-bis(dithiolene) complexes are known as strong NIR absorbers in a wide range of NIR wavelengths and have been widely used in laser technologies. However, we have recently demonstrated that nickel-bis(dithiolene) complexes also display strong photothermal activities under laser irradiation in the near infrared region which is of great interest in material science and in biotechnologies.

First, it has been demonstrated that the photothermal activity of liquid crystals built around metal-bis(dithiolene) complexes can be used to stimulate their self-assembly properties under NIR irradiation, making them good candidates for data storage.[1] Water-soluble metal-bis(dithiolene) complexes can also be used to induce cell death under NIR-laser irradiation, highlighting that such complexes can be good candidates for photothermal therapies (PTT).[2] Recent investigations have also demonstrated that NIR irradiation of nickel-bis(dithiolene) containing organic nanoparticles allows the fine control of the release of their drug contents in solution.[3,4] The photothermal properties of metal-bis(dithiolene) complexes have also been used to develop photoresponsive composite material with liquid crystal elastomer (LCE) of high interest in soft robotics.[5] Finally, the photothermal properties of metal-bis(dithiolene) complexes have been properly quantified and a new photothermal index (IPT) allowing to rank molecular photothermal agent have been introduced.[6]



Overview of the systems presented

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