



Quinonediimine ligands: from oligomeric coordination complexes in solution to molecular wires on surfaces

Simon Pascal,^a Lucien Lavaud,^a Hassib Audi,^a Gabriel Canard,^a Vijai M. Santhini,^b Christian Wäckerlin,^b Aleš Cahlík,^b Jack Hellerstedt,^b Jesús I. Mendieta-Moreno,^b Denis Jacquemin,^c Pavel Jelínek,^b Olivier Siri^a

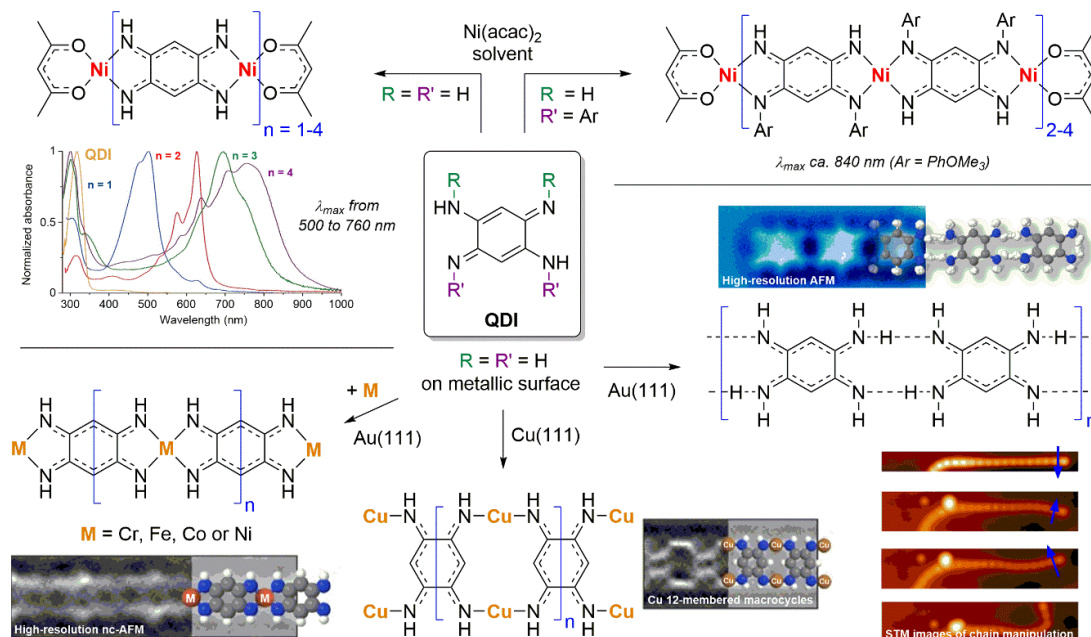
^a Aix Marseille Univ, CNRS, CINaM, UMR 7325, Campus de Luminy, F-13288 Marseille, Cedex 09, France.
Email: pascal@cinam.univ-mrs.fr

^b Institute of Physics of the Czech Academy of Sciences, CZ-16200 Prague 6, Czech Republic.

^c Laboratoire CEISAM, Université de Nantes, CNRS UMR 6230, Nantes, France.

Abstract:

2,5-Diamino-1,4-benzoquinonediimine (QDI) stands as a versatile bis-bidentate and ditopic ligand for the preparation of coordination complexes featuring unusual optical or magnetic properties.^[1] In solution, un/di-substituted QDIs allow to prepare extended and planar Ni(II) tapes whose absorption maxima directly depend on the length of the oligomers and can reach the near-infrared range.^[2] Recently, on-surface synthesis of coordination polymers with QDIs under ultra-high vacuum conditions enabled the formation of flexible 1D π -d conjugated wires (M = Cr, Fe, Ni, Co, Cu) with lengths up to hundreds of nanometers.^[3] This strategy also lead to unprecedented hydrogen-bonded assemblies of QDIs that exhibit π -conjugation along the chain due to concerted proton transfer and can be manipulated.^[4]



References:

- [1] S. Pascal, O. Siri, *Coord. Chem. Rev.* **2017**, 350, 178.
- [2] a) H. Audi, Z. Chen, A. Charaf-Edin, A. D'Aléo, G. Canard, D. Jacquemin, O. Siri, *Chem. Commun.* **2014**, 50, 15140; b) L. Lavaud, Z. Chen, M. Elhabiri, D. Jacquemin, G. Canard, O. Siri, *Dalton Trans.* **2017**, 46, 12794.
- [3] V. M. Santhini, C. Wäckerlin, A. Cahlík, M. Ondráček, S. Pascal, A. Matěj, O. Stetsovych, P. Mutombo, P. Lazar, O. Siri, P. Jelínek, *Angew. Chem. Int. Ed.* **2021**, 60, 439.
- [4] A. Cahlík, J. Hellerstedt, J. I. Mendieta-Moreno, M. Švec, V. M. Santhini, S. Pascal, D. Soler-Polo, S. Erlingsson, K. Výborný, P. Mutombo, O. Marsalek, O. Siri, P. Jelínek, *ACS Nano* **2021**, 15, 10357.