

Molecular Metal Wires and Molecular Switches

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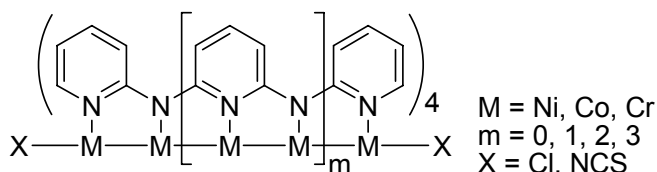
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Keywords: Metal-Metal Bonds, Metal String Complexes, Molecular Metal Wires, Molecular Switches

I. Linear Metal String Complexes^{1,2,3}

- * Synthesis, Structure, Bonding



II. Potential Application as Molecular Metal Wires & Molecular Switches⁴

- * STM Study on the Conductivity of Metal Strings
- * C-AFM Measurements of Single Metal String Molecules
- * Comparative Study on the I-V Characteristics (Theory V.S. Experiment)

III. Tuning of the Metal Strings^{5,6}

- * Naphthyridyl Amino Ligands: Low Oxidation Mixed Metal Strings
- * Asymmetrical Ligands: Toward Molecular Rectifier
- * Heteronuclear Metal String Complexes

IV. Conclusion

Reference:

1. C.-Y. Yeh, C.-C. Wang, Y.-H. Chen and S.-M. Peng, in *Redox Systems Under Nano-Space Control*, Ed: T. Hirao, Springer, Germany, 2006, Ch. 5.
2. S.-Y. Lai, T.-W. Lin, Y.-H. Chen, C.-C. Wang, G.-H. Lee, M.-H. Yang, M.-K. Leung and S.-M. Peng, *J. Am. Chem. Soc.*, **1999**, *121*, 250.
3. S.-J. Shieh, C.-C. Chou, G.-H. Lee, C.-C. Wang and S.-M. Peng, *Angew. Chem. Int. Ed. Engl.*, **1997**, *36*, 56.
4. I.-W. P. Chen, M.-D. Fu, W.-H. Tseng, J.-Y. Yu, S.-H. Wu, C.-J. Ku, C.-H. Chen, and S.-M. Peng, *Angew. Chem. Int. Ed. Engl.*, **2006**, 5414.
5. (a) C.-H. Chien, J.-C. Chang, C.-Y. Yeh, G.-H. Lee, J.-M. Fang and S.-M. Peng, *Dalton Trans.*, **2006**, 2106. (b) C.-H. Chien, G.-H. Lee, Y. Song and S.-M. Peng, *Dalton Trans.*, **2006**, 3249.
6. M.-M. Rohmer, I. P.-C. Liu, J.-C. Lin, M.-J. Chiu, C.-H. Lee, G.-H. Lee, M. Benard, X. Lopez, S.-M. Peng, *Angew. Chem. Int. Ed. Engl.*, **2007**, *46*, 3533.



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