



národní
úložiště
šedé
literatury

Modification of Metal Surfaces by Optically Active [7]Helicene Derivatives for Molecular Sensing.

Walaská, Hana
2018

Dostupný z <http://www.nusl.cz/ntk/nusl-389955>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 18.04.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní nusl.cz .

Modification of Metal Surfaces by Optically Active [7]Helicene Derivatives for Molecular Sensing

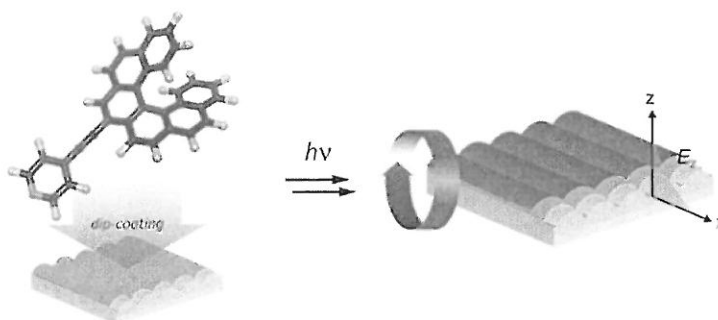
Hana Walaská,^{1,2} Yevgeniya Kalachyova,² Roman Elashnikov,² Jan Storch,¹ Jaroslav Žádný,¹ Oleksiy Lyutakov*²

¹Institute of Chemical Process Fundamentals of the CAS, v. v. i., Rozvojová 1/135, Prague 6, 165 02, Czech Republic, ²Department of Solid State Engineering, UCT Prague, Technická 5, Prague 6, 166 28, Czech Republic
e-mail: walaskah@vscht.cz

Helicenes and their functional layers have a great application potential in many fields of research due to their unique electronic and chiroptical properties [1]. Although they were successfully applied in molecular recognition [2] and sensing [3], their use in surface plasmon polariton-based detection is exceptional indeed.

With regard to above mentioned fact, new derivatives of 9-(pyridylethynyl)[7]helicenes were firstly prepared and fully characterized in this study. Consequently, they were successfully separated to their (*P*)- and (*M*)-enantiomers using a preparative HPLC with chiral stationary phase. These optical antipodes were advantageously used for modification of silver plasmon active nanogratings suitable for a SERS-based detection of (bio)molecules. Properties of such nanostructures were studied using different spectro- and microscopic techniques. As proved by UV-Vis spectrometry, a change of plasmon resonance wavelength position and intensity was observed and indicated the appearance of chiral surface plasmon polarization (Fig. 1).

Fig. 1



This work was supported by the Czech ministry of Industry and Trade (reg. No. FV 10082).

1 Gingras, M. *Chem. Soc. Rev.* **2013**, 42, 1051.

2 Weix, D. J.; Dreher, S. D.; Katz, T. J. *J. Am. Chem. Soc.* **2000**, 122, 10027.

3 Storch, J.; Žádný, J.; Strašák, T.; Kubala, M.; Sýkora, J.; Dušek, M.; Církva, V.; Matějka, P.; Krbal, M.; Vacek, J. *Chem. Eur. J.* **2015**, 21, 2343.