

大阪府立大学 工学域 電子物理工学課程  
第91回電子物理工学セミナー

日本学術振興会研究拠点形成事業 (Core-to-Core)  
「スピンキラリティを軸にした先端材料コンソーシアム」  
R-1, 2, 3 共同セミナー

Date: 21th March 2017

Time: 14:00 – 15:00

Room: West-K301, B4 building, OPU

## Chiral Nanophotonics: Applications to Soft Matter and Magnetic Materials

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Chirality, the property of an object to lack mirror symmetry and thus be able to exist in two non-superimposable mirror image forms, is a ubiquitous property in nature. Indeed, the building blocks of life, amino acids and sugars are chiral, and this sense of handedness propagates in to the complex structures of life. In this talk I will discuss how near fields with chiral asymmetries, generated by light scattering from chiral nanostructures, can uniquely characterise soft matter and magnetic materials.

### ➤ Recent Publications

- 1 Jack, C., Karimullah, A. S., Leyman, R., Tullius, R., Rotello, V. M., Cooke, G., Gadegaard, N., Barron, L. D., and Kadodwala, M. (2016) Biomacromolecular stereostructure mediates mode hybridization in chiral plasmonic nanostructures. *Nano Letters*, 16(9), pp. 5806-5814
- 2 Jack, C. et al. (2016) Spatial control of chemical processes on nanostructures through nano-localised water heating. *Nature Communications*, 7, 10946.
- 3 Karimullah, A., Jack, C., Tullius, R., Rotello, V. M., Cooke, G., Gadegaard, N., Barron, L. D., and Kadodwala, M. (2015) Disposable plasmonics: plastic templated plasmonic metamaterials with tunable chirality. *Advanced Materials*, 27(37), pp. 5610-5616.
- 4 Tullius, R., Karimullah, A. S., Rodier, M., Fitzpatrick, B., Gadegaard, N., Barron, L. D., Rotello, V. M., Cooke, G., Laphorn, A., and Kadodwala, M. (2015) "Superchiral" spectroscopy: detection of protein higher order hierarchical structure with chiral plasmonic nanostructures. *Journal of the American Chemical Society (Communication)*, 137(26), pp. 8380-8383.

電子物理工学課程      主任      石原 一  
電子物理工学課程      セミナー担当      戸川 欣彦