Title	**Innovative spin labels for high-sensitivity distance measurements in proteins by advanced EPR spectroscopy**
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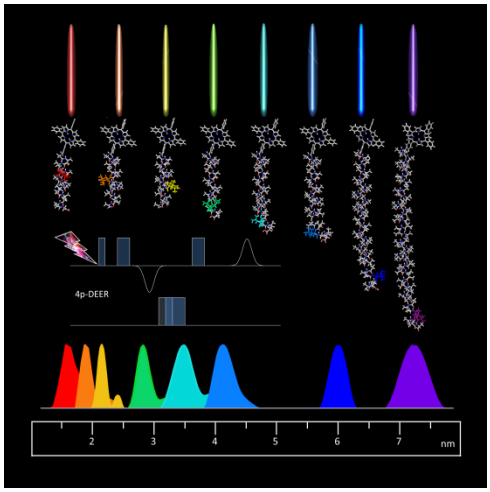
Project description:

The aim of the research project is the application of Electron Paramagnetic Resonance (EPR) spectroscopy, using different advanced EPR techniques, as investigation tool for the study of biological systems, focusing on the resolution of structural and conformational problems and exploiting the triplet state as paramagnetic probe. The spectroscopic investigation, complemented by suitably tailored theoretical approaches, constitutes the basis for measuring nanometer distances in complex biological systems. The methodology is applied to paradigmatic proteins in which the chromophore probe is endogenously bound to different classes of proteins. Appropriate spin-labeling protocols can finally extend this novel strategy to any macromolecular system with a general impact in structural (bio)chemistry.



Publications:

Di Valentin, M., Albertini, M., Zurlo, E., Gobbo, M., Carbonera, D. Porphyrin triplet state as a potential spin label for nanometer distance measurements by PELDOR spectroscopy (2014) Journal of the American Chemical Society, 136, 6582.

Di Valentin, M., Albertini, M., Dal Farra, M.G., Zurlo, E., Orian, L., Polimeno, A., Gobbo, M., Carbonera, D. Light-induced porphyrin-based spectroscopic ruler for nanometer distance measurements (2016) Chemistry - A European Journal, 22, 17059.

Di Valentin, M., Dal Farra, M.G., Galazzo, L., Albertini, M., Schulte, T., Hofmann, E., Carbonera, D. Distance measurements in peridinin-chlorophyll a-protein by light-induced PELDOR spectroscopy. Analysis of triplet state localization (2016) Biochimica et Biophysica Acta - Bioenergetics, 1857, 1909.

Collaborations/Network:

Collaboration with experts in theoretical/computational chemistry (modeling and data analysis), in peptide synthesis and molecular biology (sample preparation and spin labeling protocols) have been established in the Departments of Chemical Sciences and Biology of the University of Padua.

Research funding:

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