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Rational design of porphyrin and BODIPY analogues for biomedical applications: further progress and future perspectives

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Over the last two years, considerable further progress has been made in using a rational design approach [1,2] guided by calculations with the Gaussian 09 software package on the Lengau cluster and an application of Michl's perimeter model [3] to prepare novel main group element complexes of porphyrin and boron dipyrromethene (BODIPY) analogues that are suitable for use as photosensitizer dyes in photodynamic therapy against cancer and bacteria [4-8] and as optical limiters in applications relevant to the protection of human eyesight from intense incident laser beams [9-10]. There has been a strong focus on exploring how the lowest energy porphyrin absorption band can be substantially red-shifted into the phototherapeutic window by introducing reduced and confused pyrrole moieties [2,4-7]. Future directions on the use of the Gaussian 09 software package in the context of this research will be described.

References

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Student or Postdoc?

Email address

Co-Authors

CHPC User

CHPC Research Programme

Workshop Duration

Primary author: Prof. MACK, John (Rhodes University)

Co-authors: Dr SOY, Rodah (Eldoret University); Dr BABU, Balaji (SRM University - AP); Dr MAY, Aviwe (North-west University); Dr KUBHEKA, Gugu (Rhodes University); Mr SEBLAWU, Godfred (Rhodes University); Ms LEDWABA, Mahlatse (Rhodes University); Ms MAGWAZA, Temlandvo (Rhodes University); Ms TAUYAKHALE, Kaisano (Rhodes University); Ms MACIGANE, Pertunia (Rhodes University); Prof. NGOY, Bokolombe (University of Kinshasa); Prof. DE WAEL, Karolien (University of Antwerp); Prof. NYOKONG, Tebello (Rhodes University)

Presenter: Prof. MACK, John (Rhodes University)

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