

Fernando Jorge da Silva Pina
Full Professor, Researcher
DQ - Departamento de Química
DCR - Departamento de Conservação e Restauro
LAQV@REQUIMTE
Type of address: Postal address.
Portugal
Email: fp@fct.unl.pt



Qualifications

Engenharia Química. Especialidade: Processos Químicos, Doctorate, Fotodissociação da Água Catalizada por Complexos Metálicos em Solução, Universidade Técnica de Lisboa
Award Date: 1 Jan 1983

Employment

Full Professor

DQ - Departamento de Química
Universidade NOVA de Lisboa
Portugal
11 Aug 1973 → present

Full Professor

DCR - Departamento de Conservação e Restauro
Universidade NOVA de Lisboa
Portugal
11 Aug 1973 → present

Researcher

LAQV@REQUIMTE
Universidade NOVA de Lisboa
Portugal
1 Jan 2015 → present

Researcher

CQFB-REQUIMTE - Centro de Química Fina e Biotecnologia (Lab. Associado REQUIMTE)
Universidade NOVA de Lisboa
11 Aug 1973 → 31 Dec 2014

Visiting Professor

University of Bordeaux
Pessac, France
15 Nov 2010 → 15 Dec 2010

Visiting Professor

University of Münster
Münster, Germany
1 Apr 2008 → 30 Apr 2008

Visiting Researcher

Massachusetts Institute of Technology (MIT)
Cambridge, United States
5 Mar 2007 → 26 Aug 2007

Professore a contratto per il dottorato di Ricerca

Research outputs

The Triumph of the blue in nature and in Anthropocene

Pina, F., Basílio, N., Parola, A. J., Melo, M. J., Oliveira, J. & de Freitas, V., Feb 2023, In: *Dyes and Pigments*. 210, 17 p., 110925.

Iron-gall inks: a review of their degradation mechanisms and conservation treatments

Melo, M. J., Otero, V., Nabais, P., Teixeira, N., Pina, F., Casanova, C., Fragoso, S. & Sequeira, S. O., 16 Sept 2022, In: *Heritage Science*. 10, 1, 11 p., 145.

Intermolecular Copigmentation between Delphinidin 3- O-Glucoside and Chlorogenic Acid: Taking into Account the Existence of Neutral and Negatively Charged Forms of the Copigment

Seco, A., Basílio, N., Brás, N. F., Yoshida, K., Kondo, T., Oyama, K. I. & Pina, F., 14 Sept 2022, In: *Journal of Agricultural and Food Chemistry*. 70, 36, p. 11391-11400 10 p.

Intermolecular Copigmentation of Malvidin-3- O-glucoside with Caffeine in Water: The Effect of the Copigment on the pH-Dependent Reversible and Irreversible Processes

Camuenho, A., Seco, A., Parola, A. J., Basílio, N. & Pina, F., 26 Jul 2022, In: *ACS Omega*. 7, 29, p. 25502-25509 8 p.

Modulating the thermodynamics, kinetics and photochemistry of 7-diethylamino-4': dimethylaminoflavylum in water/ethanol, SDS and CTAB micelles

Araújo, P., Oliveira, J., Basílio, N., Parola, A. J., de Freitas, V. & Pina, F., 28 Jun 2022, In: *Physical Chemistry Chemical Physics*. 24, 29, p. 17593-17604 12 p.

Photoreactivity and stability of flavonoid yellows used in cultural heritage

Sharif, S., Nabais, P., Melo, M. J., Pina, F. & Oliveira, M. C., Mar 2022, In: *Dyes and Pigments*. 199, 110051.

A New Insight into the Degradation of Anthocyanins: Reversible versus the Irreversible Chemical Processes

Sousa, D., Basílio, N., Oliveira, J., de Freitas, V. & Pina, F., 19 Jan 2022, In: *Journal of Agricultural and Food Chemistry*. 70, 2, p. 656-668 13 p.

Natural and Synthetic Flavylum-Based Dyes: The Chemistry behind the Color

Cruz, L., Basílio, N., Mateus, N., De Freitas, V. & Pina, F., 12 Jan 2022, In: *Chemical Reviews*. 122, 1

Light- and pH-regulated Water-soluble Pseudorotaxanes Comprising a Cucurbit[7]uril and a Flavylum-based Axle

Seco, A., Yu, S., Tron, A., McClenaghan, N. D., Pina, F., Jorge Parola, A. & Basílio, N., 25 Nov 2021, In: *Chemistry - A European Journal*. 27, 66, p. 16512-16522

Achieving Complexity at the Bottom: Molecular Metamorphosis Generated by Anthocyanins and Related Compounds

Basílio, N., Parola, A. J., Sousa, D., Petrov, V., Cruz, L., De Freitas, V. & Pina, F., 16 Nov 2021, In: *ACS Omega*.

Strategies used by nature to fix the red, purple and blue colours in plants: a physical chemistry approach

Basílio, N., Mendoza, J., Seco, A., Oliveira, J., de Freitas, V. & Pina, F., 14 Nov 2021, In: *Physical Chemistry Chemical Physics*. 23, 42, p. 24080-24101 22 p.

Anthocyanin color stabilization by host-guest complexation with p-sulfonatocalix[n]arenes

Mendoza, J., Cruz, L., de Freitas, V., Pina, F. & Basílio, N., 4 Sept 2021, In: *Molecules*. 26, 17, 5389.

Copigmentation of anthocyanins with copigments possessing an acid-base equilibrium in moderately acidic solutions

Oliveira, J., Azevedo, J., Seco, A., Mendoza, J., Basílio, N., de Freitas, V. & Pina, F., Sept 2021, In: *Dyes and Pigments*. 193, 109438.

Evolution of flavylum-based color systems in plants: What physical chemistry can tell us

Pina, F., Alejo-armijo, A., Clemente, A., Mendoza, J., Seco, A., Basílio, N. & Parola, A. J., 7 Apr 2021, In: International Journal of Molecular Sciences. 22, 8, 3833.

On the Limits of Anthocyanins Co-Pigmentation Models and Respective Equations

Oliveira, J., Azevedo, J., Teixeira, N., Araújo, P., De Freitas, V., Basílio, N. & Pina, F., 3 Feb 2021, In: Journal of Agricultural and Food Chemistry. 69, 4, p. 1359-1367

Photochemistry of 5-Hydroxy-4'-Dimethylaminoflavylum in the presence of SDS micelles. The role of metastable states of flavylum cation-quinoidal base and trans-chalcones

Araújo, P., Mendoza, J., Pina, F., Pereira, A. R., Fernandes, I., de Freitas, V. & Oliveira, J., 1 Nov 2020, In: Journal of Photochemistry and Photobiology A: Chemistry. 402, 112827.

Erratum: New procedure to calculate all equilibrium constants in flavylum compounds: Application to the copigmentation of anthocyanins (ACS Omega (2019) 4:7 (12058-12070) DOI: 10.1021/acsomega.9b01066)

Mendoza, J., Basílio, N., De Freitas, V. & Pina, F., 24 Sept 2020, In: ACS Omega. 5, 39, p. 25476 1 p.

The peculiarity of malvidin 3-O-(6-O-p-coumaroyl) glucoside aggregation. Intra and intermolecular interactions

Mendoza, J., Oliveira, J., Araújo, P., Basílio, N., Teixeira, N., Brás, N. F., Pina, F., Yoshida, K. & de Freitas, V., Sept 2020, In: Dyes and Pigments. 180, 108382.

Dye-sensitized solar cells based on dimethylamino- π -bridge-pyranoanthocyanin dyes

Pinto, A. L., Cruz, H., Oliveira, J., Araújo, P., Cruz, L., Gomes, V., Silva, C. P., Silva, G. T. M., Mateus, T., Calogero, G., de Freitas, V., Quina, F. H., Pina, F., Parola, A. J. & Lima, J. C., Aug 2020, In: Solar Energy. 206, p. 188-199 12 p.

Chemical evolution of the colour systems generated by riccionidin A, 3-deoxyanthocyanidins and anthocyanins

Alejo-Armijo, A., Mendoza, J., Parola, A. J. & Pina, F., Jun 2020, In: Phytochemistry. 174, 112339.

A 1000-year-old mystery solved: Unlocking the molecular structure for the medieval blue from *Chrozophora tinctoria*, also known as folium

Nabais, P., Oliveira, J., Pina, F., Teixeira, N., De Freitas, V., Brás, N. F., Clemente, A., Rangel, M., Silva, A. M. S. & Melo, M. J., Apr 2020, In: Science Advances. 6, 16, eaaz7772.

Multistate of chemical species of 2,6-Bis(arylidene)cyclohexanones. On the role of chalcone and spiro species

Alejo-Armijo, A., Corici, L., Buta, I., Cseh, L., Moro, A. J., Parola, A. J., Lima, J. C. & Pina, F., Mar 2020, In: Dyes and Pigments. 174, 108013.

A Photoelectrochemical Study of Bioinspired 2-Styryl-1-Benzopyrylium Cations on TiO₂ Nanoparticle Layer for Application in Dye-Sensitized Solar Cells

Calogero, G., Citro, I., Sebastianella, G. C., Di Marco, G., Diniz, A. M., Parola, A. J. & Pina, F., 5 Dec 2019, In: Materials. 12, 24, 4060.

Catechol versus carboxyl linkage impact on DSSC performance of synthetic pyranoflavylum salts

Pinto, A. L., Cruz, L., Gomes, V., Cruz, H., Calogero, G., de Freitas, V., Pina, F., Parola, A. J. & Lima, J. C., 1 Nov 2019, In: Dyes and Pigments. 170, 107577.

Ground and excited state properties of furanoflavylum derivatives

Alejo-Armijo, A., Basílio, N., Freitas, A. A., Maçanita, A. L., Lima, J. C., Jorge Parola, A. & Pina, F., 14 Oct 2019, In: Physical Chemistry Chemical Physics. 21, 38, p. 21651-21662 12 p.

Study of the multi-equilibria of red wine colorants pyrananthocyanins and evaluation of their potential in dye-sensitized solar cells

Pinto, A. L., Oliveira, J., Araújo, P., Calogero, G., de Freitas, V., Pina, F., Parola, A. J. & Lima, J. C., 1 Oct 2019, In: Solar Energy. 191, p. 100-108 9 p.

Purple-fleshed sweet potato acylated anthocyanins: Equilibrium network and photophysical properties

Oliveira, H., Basílio, N., Pina, F., Fernandes, I., de Freitas, V. & Mateus, N., 1 Aug 2019, In: Food Chemistry. 288, p. 386-394 9 p.

New Procedure to Calculate All Equilibrium Constants in Flavylium Compounds: Application to the Copigmentation of Anthocyanins

Mendoza, J., Basílio, N., de Freitas, V. & Pina, F., 31 Jul 2019, In: ACS Omega. 4, 7, p. 12058-12070 13 p.

Generalization of the anthocyanins kinetics and thermodynamics multistate to 2,6-bis(2-hydroxybenzylidene)cyclohexanones

Alejo-Armijo, A., Moro, A. J., Parola, A. J., Lima, J. C., Pina, F., Corici, L., Shova, S. & Cseh, L., 1 Apr 2019, In: Dyes and Pigments. 163, p. 573-588 16 p.

PH-Dependent Multistate System Generated by a Synthetic Furanoflavylium Compound: An Ancestor of the Anthocyanin Multistate of Chemical Species

Alejo-Armijo, A., Parola, A. J. & Pina, F., 22 Feb 2019, In: ACS Omega. 4, 2, p. 4091-4100 10 p.

Intrinsically Electrochromic Deep Eutectic Solvents

Cruz, H., Jordão, N., Dionísio, M., Pina, F. & Branco, L. C., 31 Jan 2019, In: ChemistrySelect. 4, 4, p. 1530-1534 5 p.

A model compound for pyridinechalcone-based multistate systems. Ring opening-closure as the slowest kinetic step of the multistate

Camuenho, A., Jorge Parola, A., Alejo-Armijo, A., Pandian, R., Gomes, C. S. B., Laia, C. A. T. & Pina, F., 1 Jan 2019, In: New Journal of Chemistry. 43, 46, p. 18229-18239 11 p.

Chapter 2: Chemistry of Anthocyanins

Pina, F., Parola, A. J., Melo, M. J., Lima, J. C. & Freitas, V. D., 1 Jan 2019, *Steviol Glycosides: Cultivation, Processing, Analysis and Applications in Food*. Brooks, M. S-L. & Celli, G. B. (eds.). 12 ed. RSC - Royal Society of Chemistry, p. 34-76 43 p. (Food Chemistry, Function and Analysis; vol. 2019-January, no. 12).

Achieving Complexity at the Bottom. 2,6-Bis(arylidene) cyclohexanones and Anthocyanins: The Same General Multistate of Species

Alejo-Armijo, A., Corici, L., Cseh, L., Aparaschivei, D., Moro, A. J., Jorge Parola, A., Lima, J. C. & Pina, F., 19 Dec 2018, In: ACS Omega. 3, 12, p. 17853-17862

New insights into iron-gall inks through the use of historically accurate reconstructions

Díaz Hidalgo, R. J., Córdoba, R., Nabais, P., Silva, V., Melo, M. J., Pina, F., Teixeira, N. & Freitas, V., 1 Dec 2018, In: Heritage Science. 6, 1, 63.

On the multistate of 2'-hydroxyflavylium-flavanone system. Illustrating the concept of a timer with reset at the molecular level

Slavcheva, S., Mendoza, J., Stanimirov, S., Petkov, I., Basílio, N., Pina, F. & Petrov, V., 1 Nov 2018, In: Dyes and Pigments. 158, p. 465-473 9 p.

Thermodynamic Stability of Flavylium Salts as a Valuable Tool to Design the Synthesis of A-Type Proanthocyanidin Analogues

Alejo-Armijo, A., Parola, A. J., Pina, F., Altarejos, J. & Salido, S., 5 Oct 2018, In: Journal of Organic Chemistry. 83, 19, p. 12297-12304 8 p.

Studies of bipyridinium ionic liquids and deep eutectic solvents as electrolytes for electrochromic devices

Jordão, N., Cruz, H., Pina, F. & Branco, L. C., 1 Sept 2018, In: Electrochimica Acta. 283, p. 718-726 9 p.

Highly Photoluminescent Sulfide Clusters Confined in Zeolites

Ruivo, A., Coutino-Gonzalez, E., Santos, M. M., Baekelant, W., Fron, E., Roefsaers, M. B. J., Pina, F., Hofkens, J. & Laia, C. A. T., 5 Jul 2018, In: Journal of Physical Chemistry C. 122, 26, p. 14761-14770 10 p.

Impact of Lignosulfonates on the Thermodynamic and Kinetic Parameters of Malvidin-3- O-glucoside in Aqueous Solutions
Araújo, P., Basílio, N., Fernandes, A., Mateus, N., Freitas, V. D., Pina, F. & Oliveira, J., 27 Jun 2018, In: Journal of Agricultural and Food Chemistry. 66, 25, p. 6382-6387 6 p.

Colour modulation of blue anthocyanin-derivatives. Lignosulfonates as a tool to improve the water solubility of natural blue dyes

Araújo, P., Basílio, N., Azevedo, J., Fernandes, A., Mateus, N., Pina, F., de Freitas, V. & Oliveira, J., 1 Jun 2018, In: Dyes and Pigments. 153, p. 150-159 10 p.

Rationalizing the Color in Heavenly Blue Anthocyanin: A Complete Kinetic and Thermodynamic Study

Mendoza, J., Basílio, N., Pina, F., Kondo, T. & Yoshida, K., 17 May 2018, In: Journal of Physical Chemistry B. 122, 19, p. 4982-4992 11 p.

Extending the stability of red and blue colors of malvidin-3-glucoside-lipophilic derivatives in the presence of SDS micelles

Mendoza, J., Pina, F., Basílio, N., Guimarães, M., de Freitas, V. & Cruz, L., 1 Apr 2018, In: Dyes and Pigments. 151, p. 321-326 6 p.

Unveiling the 6,8-Rearrangement in 8-Phenyl-5,7-dihydroxyflavylium and 8-Methyl-5,7-dihydroxyflavylium through Host-Guest Complexation

Basílio, N., Lima, J. C., Cruz, L., de Freitas, V., Pina, F., Ando, H., Kimura, Y., Oyama, K. I. & Yoshida, K., 10 Oct 2017, In: European Journal of Organic Chemistry. 2017, 37, p. 5617-5626 10 p.

Bis(bipyridinium) Salts as Multicolored Electrochromic Devices

Jordão, N., Cruz, H., Branco, A., Pina, F. & Branco, L. C., 1 Sept 2017, In: ChemPlusChem. 82, 9, p. 1211-1217 7 p.

Electronic and charge transfer properties of bio-inspired flavylium ions for applications in TiO₂-based dye-sensitized solar cells

Calogero, G., Citro, I., Di Marco, G., Caramori, S., Casarin, L., Bignozzi, C. A., Avó, J., Jorge Parola, A. & Pina, F., 1 Sept 2017, In: Photochemical and Photobiological Sciences. 16, 9, p. 1400-1414 15 p.

Effect of β -Cyclodextrin on the Multistate Species Distribution of 3-Methoxy-4',7-dihydroxyflavylium. Discrimination of the Two Hemiketal Enantiomers

Gago, S., Basílio, N., Quintas, A. & Pina, F., 9 Aug 2017, In: Journal of Agricultural and Food Chemistry. 65, 31, p. 6346-6358 13 p.

Binding of the five multistate species of the anthocyanin analog 7- β -D-glucopyranosyloxy-4'-hydroxyflavylium to the β -cyclodextrin derivative captisol

Mendoza, J., Basílio, N., Dangles, O., Mora, N., Al Bittar, S. & Pina, F., 1 Aug 2017, In: Dyes and Pigments. 143, p. 479-487 9 p.

Influence of the structural features of amino-based pyranoanthocyanins on their acid-base equilibria in aqueous solutions

Oliveira, J., Araújo, P., Fernandes, A., Brás, N. F., Mateus, N., Pina, F. & de Freitas, V., 1 Jun 2017, In: Dyes and Pigments. 141, p. 479-486 8 p.

2,2'-Spirobis[chromene] Derivatives Chemistry and Their Relation with the Multistate System of Anthocyanins

Moro, A. J., Parola, A. J., Pina, F., Pana, A. M., Badea, V., Pausescu, I., Shova, S. & Cseh, L., 19 May 2017, In: Journal of Organic Chemistry. 82, 10, p. 5301-5309 9 p.

Contrasting pK_a Shifts in Cucurbit[7]uril Host-Guest Complexes Governed by an Interplay of Hydrophobic Effects and Electrostatic Interactions

Basílio, N., Gago, S., Parola, A. J. & Pina, F., 31 Jan 2017, In: ACS Omega. 2, 1, p. 70-75 6 p.

Synthesis and equilibrium multistate of new pyrano-3-deoxyanthocyanin-type pigments in aqueous solutions

Sousa, J. L. C., Gomes, V., Mateus, N., Pina, F., de Freitas, V. & Cruz, L., 1 Jan 2017, In: Tetrahedron. 73, 41, p. 6021-6030 10 p.

Exploring the diethylaminoflavylum derivatives multistate system of chemical reactions in the presence of CTAB micelles: Thermodynamic reversibility achieved through different kinetic pathways

Pessêgo, M., Basílio, N., Mendoza, J., Avó, J., Cunha-Silva, L., Parola, A. J. & Pina, F., 2017, In: RSC Advances. 7, 48, p. 30469-30480 12 p.

Hiding and unveiling trans-chalcone in a constrained derivative of 4',7-dihydroxyflavylum in water: a versatile photochromic system

Pessêgo, M., Gago, S., Basílio, N., Laia, C. A. T., Jorge Parola, A., Lima, J. C. & Pina, F., 2017, In: Organic & Biomolecular Chemistry. 15, 2, p. 338-347 10 p.

Evidence against the Twisted Intramolecular Charge Transfer (TICT) model in 7-aminoflavylum derivatives

Avó, J., Petrov, V., Basílio, N., Jorge Parola, A. & Pina, F., 1 Dec 2016, In: Dyes and Pigments. 135, p. 86-93 8 p.

A multiproxy approach to evaluate biocidal treatments on biodeteriorated majolica glazed tiles

Coutinho, M. L., Miller, A. Z., Martin-Sanchez, P. M., Mirão, J., Gomez-Bolea, A., Machado-Moreira, B., Cerqueira-Alves, L., Jurado, V., Saiz-Jimenez, C., Lima, A., Phillips, A. J. L., Pina, F. & Dinis, M. F. M. A. D. M., Dec 2016, In: Environmental Microbiology.

Photoluminescent Nanocrystals in a Multicomponent Aluminoborosilicate Glass

Ruivo, A., Ferro, M., Andrade, S. M., Rocha, J., Pina, F. & Laia, C. A. T., 3 Nov 2016, In: Journal of Physical Chemistry C. 120, 43, p. 24925-24931 7 p.

Corrigendum to: Host-Guest Complexes of Flavylum Cations and Cucurbit[7]uril: The Influence of Flavylum Substituents on the Structure and Stability of the Complex (ChemPlusChem, (2015), 80, (1779-1785), 10.1002/cplu.201500304)

Basílio, N., Petrov, V. & Pina, F., 1 Nov 2016, In: ChemPlusChem. 81, 11, p. 1136 1 p.

Chemistry and photochemistry of anthocyanins and related compounds: A thermodynamic and kinetic approach

Basílio, N. & Pina, F., Nov 2016, In: Molecules. 21, 11, 1502.

Analogues of natural 3-deoxyanthocyanins: O-glucosides of the 4',7-dihydroxyflavylum ion and the deep influence of glycosidation on color

Basílio, N., Al Bittar, S., Mora, N., Dangles, O. & Pina, F., Oct 2016, In: International Journal of Molecular Sciences. 17, 10, 1751.

Effect of Methyl, Hydroxyl, and Chloro Substituents in Position 3 of 3',4',7-Trihydroxyflavylum: Stability, Kinetics, and Thermodynamics

Alejo-Armijo, A., Salido, S., Altarejos, J., Parola, A. J., Gago, S., Basílio, N., Cabrita, L. & Pina, F., 22 Aug 2016, In: Chemistry - A European Journal. 22, 35, p. 12495-12505 11 p.

A Multistate Molecular Switch Based on the 6,8-Rearrangement in Bromo-apigeninidin Operated with pH and Host-Guest Inputs

Basílio, N., Cruz, L., De Freitas, V. & Pina, F., 28 Jul 2016, In: Journal of Physical Chemistry B. 120, 29, p. 7053-7061 9 p.

Extending the Study of the 6,8 Rearrangement in Flavylum Compounds to Higher pH Values: Interconversion between 6-Bromo and 8-Bromo-apigeninidin

Cruz, L. M., Basílio, N. M., de Freitas, V. A., Lima, J. C. & Pina, F. J., 1 Jun 2016, In: ChemistryOpen. 5, 3, p. 236-246 11 p.

A blue 4',7-diaminoflavylum cation showing an extended pH range stability

Tron, A., Gago, S., McClenaghan, N. D., Parola, A. J. & Pina, F., 7 Apr 2016, In: Physical Chemistry Chemical Physics. 18, 13, p. 8920-8925 6 p.

Synthesis and multistate characterization of bis-flavylum dications-symmetric resorcinol- and phloroglucinol-type derivatives as stochastic systems

Basílio, N., Garnier, T., Avó, J., Danel, M., Chassaing, S. & Pina, F., 2016, In: RSC Advances. 6, 74, p. 69698-69707 10 p.

Host-Guest Complexes of Flavylum Cations and Cucurbit[7]uril: The Influence of Flavylum Substituents on the Structure and Stability of the Complex

Basílio, N., Petrov, V. & Pina, F., 1 Dec 2015, In: ChemPlusChem. 80, 12, p. 1779-1785 7 p.

Mimicking Positive and Negative Copigmentation Effects in Anthocyanin Analogues by Host-Guest Interaction with Cucurbit[7]uril and β -Cyclodextrins

Basílio, N., Cabrita, L. & Pina, F., 9 Sept 2015, In: Journal of Agricultural and Food Chemistry. 63, 35, p. 7624-7629 6 p.

Anthocyanins and derivatives are more than flavylum cations

Pina, F., Oliveira, J. & de Freitas, V., 20 May 2015, In: Tetrahedron. 71, 20, p. 3107-3114 8 p.

Flavylum based dual photochromism: Addressing cis - trans isomerization and ring opening-closure by different light inputs

Gago, S., Basílio, N., Moro, A. J. & Pina, F., 30 Apr 2015, In: Chemical Communications. 51, 34, p. 7349-7351 3 p.

Origin of the metastable stability in flavylum multistate systems

Petrov, V., Slavcheva, S., Stanimirov, S. & Pina, F., 26 Mar 2015, In: Journal of Physical Chemistry A. 119, 12, p. 2908-2918 11 p.

Switchable electrochromic devices based on disubstituted bipyridinium derivatives

Jordão, N., Cruz, H. G. D. S., Branco, A., Pinheiro, C., Pina, F. & Branco, L. C., 9 Mar 2015, In: RSC Advances. 5, 35, p. 27867-27873 7 p.

Excited-state proton transfer in confined medium. 4-Methyl-7-hydroxyflavylum and β -Naphthol Incorporated in Cucurbit[7]uril

Basílio, N., Laia, C. A. T. & Pina, F., 12 Feb 2015, In: Journal of Physical Chemistry B. 119, 6, p. 2749-2757 9 p.

Characterization of kinetic and thermodynamic parameters of cyanidin-3-glucoside methyl and glucuronyl metabolite conjugates

Cruz, L., Basílio, N., Mateus, N., Pina, F. & De Freitas, V., 5 Feb 2015, In: Journal of Physical Chemistry B. 119, 5, p. 2010-2018 9 p.

Electrochromic devices based on disubstituted oxo-bipyridinium ionic liquids

Jordão, N., Cruz, H. G. D. S., Branco, A., Pina, F. & Branco, L. C., 2015, In: ChemPlusChem. 80, 1, p. 202-208 7 p.

Spatiotemporal control over the co-conformational switching in pH-responsive flavylum-based multistate pseudorotaxanes

Diniz, A. M. C. A., Basílio, N. M., Cruz, H. G. D. S., Pina, F. & Parola, A. J., 2015, In: Faraday Discussions. 185, p. 361-379 19 p.

Photochromism of the natural dye 7,4'-dihydroxy-5-methoxyflavylum (dracoflavylum) in the presence of (2-hydroxypropyl)- β -cyclodextrin

Lopes-Costa, T., Basílio, N., Pedrosa, J. M. & Pina, F., Oct 2014, In: Photochemical and Photobiological Sciences. 13, 10, p. 1420-1426 7 p.

Thermodynamic and Kinetic Processes of Anthocyanins and Related Compounds and their Bio-Inspired Applications

Pina, F., 12 Aug 2014, *Recent Advances in Polyphenol Research*. Romani, A., Lattanzio & Quideau, S. (eds.). Wiley-Blackwell, Vol. 4. p. 341-370 30 p. (Recent Advances in Polyphenol Research; vol. 4).

A Multistate pH-Triggered Nonlinear Optical Switch

Castet, F., Champagne, B., Pina, F. & Rodriguez, V., 4 Aug 2014, In: ChemPhysChem. 15, 11, p. 2221-2224 4 p.

Flavylium Network of Chemical Reactions in Confined Media: Modulation of 3',4',7-Trihydroxyflavylium Reactions by Host-Guest Interactions with Cucurbit[7]uril

Basilio, N. & Pina, F., 4 Aug 2014, In: *ChemPhysChem*. 15, 11, p. 2295-2302 8 p.

Chemistry and Photochemistry of 2,6-Bis(2-hydroxybenzilidene)cyclohexanone

Moro, A. J., Pana, A.-M., Cseh, L., Costisor, O., Parola, A. J. D., Cunha-Silva, L., Puttreddy, R., Rissanen, K. & Pina, F. J. D. S., Aug 2014, In: *Journal of Physical Chemistry A*. 118, 32, p. 6208-6215

Chemical Applications of Anthocyanins and Related Compounds. A Source of Bioinspiration

Pina, F., 23 Jul 2014, In: *Journal of Agricultural and Food Chemistry*. 62, 29(SI), p. 6885-6897 13 p.

4-Carboxy-7-hydroxyflavylium. A Multistate System Involving Twelve Species Reversibly Interconverted by pH and light stimuli

Gavara, R., Gago, S., Jordão, N. & Pina, F., 3 Jul 2014, In: *Journal of Physical Chemistry A*. 118, 26, p. 4723-4731 9 p.

Formation of Photoluminescent Lead Bromide Nanoparticles on Aluminoborosilicate Glass

Ruivo, A., Andrade, S. M., Rocha, J., Laia, C. A. T. & Pina, F. J. D. S., 12 Jun 2014, In: *Journal of Physical Chemistry C*. 118, 23, p. 12436-12442

Novel Bipyridinium Ionic Liquids as Liquid Electrochromic Devices

Jordão, N., Cabrita, L., Pina, F. & Branco, L. C., 1 Apr 2014, In: *Chemistry - A European Journal*. 20, 14, p. 3982-3988 7 p.

Anthocyanins and related compounds. Detecting the change of regime between rate control by hydration or by tautomerization

Pina, F., Mar 2014, In: *Dyes and Pigments*. 102, p. 308-314 7 p.

Protonation, coordination chemistry, cyanometallate "supercomplex" formation and fluorescence chemosensing properties of a bis(2,2'-bipyridino)cyclophane receptor

Gago, S. M. N., Gonzalez, J., Blasco, S., Parola, A. J. D., Albelda, M. T., Garcia-España, E. & Pina, F. J. D. S., 14 Feb 2014, In: *Dalton Transactions*. 43, 6, p. 2437-2447

Highlights of metal ion-based photochemical switches

Bianchi, A., Delgado-Pinar, E., Garcia-Espana, E., Giorgi, C. & Pina, F., 1 Feb 2014, In: *Coordination Chemistry Reviews*. 260, 1, p. 156-215 60 p.

Color stability and spectroscopic properties of deoxyvitisins in aqueous solution

Sousa, A., Cabrita, L., Araújo, P., Mateus, N., Pina, F. & de Freitas, V., Feb 2014, In: *New Journal of Chemistry*. 38, 2, p. 539-544 6 p.

On the thermal degradation of anthocyanidins: cyanidin

Cabrita, L., Petrov, V. & Pina, F., 2014, In: *RSC Advances*. 4, 36, p. 18939-18944 6 p.

Photochromism of the complex between 4'-(2-hydroxyethoxy)-7-hydroxyflavylium and β -cyclodextrin, studied by ^1H NMR, UV-Vis, continuous irradiation and circular dichroism

Gago, S., Basilio, N., Fernandes, A., Freitas, V., Quintas, A. & Pina, F., 2014, In: *Dyes and Pigments*. 110, SI, p. 106-112 7 p.

Molecular Switching, Logics, and Memories

Bianchi, A., Delgado-Pinar, E., García-Espana, E. & Pina, F., 1 Aug 2013, *Comprehensive Inorganic Chemistry II: From Elements to Applications*. 2nd ed. Elsevier, Vol. 8. p. 969-1037 69 p.

Chemistry of 7,8-dihydroxy-2-(4-dimethylaminostyryl)-1-benzopyrylium. A photochromic system switching from yellow to green

Moro, A., Diniz, A. M., Petrov, V. & Pina, F., 3 Jun 2013, In: *Journal of Photochemistry and Photobiology A: Chemistry*. 263, p. 17-23 7 p.

A flash photolysis and stopped-flow spectroscopy study of 3',4'-dihydroxy-7-O-β-D-glucopyranosyloxyflavylium chloride, an anthocyanin analogue exhibiting efficient photochromic properties.

Petrov, V., Gavara, R., Dangles, O., Al Bittar, S., Mora-Soumille, N. & Pina, F., 1 Jan 2013, In: Photochemical & photobiological sciences : Official journal of the European Photochemistry Association and the European Society for Photobiology. 12, 3, p. 576-581

Circular dichroism of anthocyanidin 3-glucoside self-aggregates

Gavara, R., Petrov, V., Quintas, A. & Pina, F., 1 Jan 2013, In: Phytochemistry. 88, NA, p. 92-98

Effect of β-cyclodextrin on the chemistry of 3',4',7-trihydroxyflavylium

Basílio, N., Fernandes, A., de Freitas, V., Gago, S. & Pina, F., 1 Jan 2013, In: New Journal of Chemistry. 37, 10, p. 3166-3173

Emptying the beta-Cyclodextrin Cavity by Light: Photochemical Removal of the trans-Chalcone of 4',7-Dihydroxyflavylium

Petrov, V., Stanimirov, S., Petrov, I. K., Fernandes, A., de Freitas, V. & Pina, F. J. D. S., 1 Jan 2013, In: Journal of Physical Chemistry A. 117, 41, p. 10692-10701

Impact of water on the cis-trans photoisomerization of hydroxychalcones.

Leydet, Y., Batat, P., Jonusauskas, G., Denisov, S., Lima, J. C., Parola, A. J., McClenaghan, N. D. & Pina, F., 1 Jan 2013, In: Journal of Physical Chemistry A. 117, 20, p. 4167-4173

Intrinsically electrochromic ionic liquids based on vanadium oxides: illustrating liquid electrochromic cells

Branco, A., Belchior, J., Branco, L. C. & Pina, F. J. D. S., 1 Jan 2013, In: RSC Advances. 3, 48, p. 25627-25630

Kinetic and thermodynamic study of 2'-hydroxy-8-methoxyflavylium. Reaction network interconverting flavylium cation and flavanone

Petrov, V., Diniz, A. M., Cunha-Silva, L., Parola, A. J. & Pina, F., 1 Jan 2013, In: RSC Advances. 3, 27, p. 10786-10794

On the photostationary state of the flavylium network of chemical reactions

Pina, F., Gomes, R., Basílio, N. & Laia, C. A. T., 1 Jan 2013, In: Journal of Photochemistry and Photobiology A: Chemistry. 269, NA, p. 1-8

Photochromism of flavylium systems. An overview of a versatile multistate system

Pina, F., Petrov, V. & Laia, C. A. T., 1 Jan 2013, In: Dyes and Pigments. 99, 1, p. 256-256

Synthesis and characterization of luminescent room temperature ionic liquids based on Ru(bpy)(CN)₄²⁻

Gago, S., Cabrita, L., Lima, J. C., Branco, L. C. & Pina, F., 1 Jan 2013, In: Dalton transactions (Cambridge, England : 2003). 42, 17, p. 6213-6218

Synthetic analogues of anthocyanins as sensitizers for dye-sensitized solar cells

Calogero, G., Sinopoli, A., Citro, I., Di Marco, G., Petrov, V., Diniz, A. M., Parola, A. J. & Pina, F., 1 Jan 2013, In: Photochemical & Photobiological Sciences. 12, 5, p. 883-894

Thermodynamic and Kinetic Properties of a New Myrtillin-Vescalagin Hybrid Pigment

García-Estevez, I., Gavara, R., Alcalde-Eon, C., Rivas-Gonzalo, J. C., Quideau, S., Escribano-Bailon, M. T. & Pina, F. J. D. S., 1 Jan 2013, In: Journal of Agricultural and Food Chemistry. 61, 47, p. 11569-11578

Thermodynamics and kinetics of Cyanidin 3-glucoside and Caffeine co-pigments

Limón, P. M., Gavara, R. & Pina, F. J. D. S., 1 Jan 2013, In: Journal of Agricultural and Food Chemistry. 61, 22, p. 5245-5251

Thermodynamics, Kinetics, and Photochromism of Oaklins: A Recent Family of Deoxyanthocyanidins

Sousa, A., Petrov, V., Araújo, P., Mateus, N., Pina, F. & de Freitas, V., 1 Jan 2013, In: Journal of Physical Chemistry B. 117, 6, p. 1901-1910

Kinetics of Zn²⁺ complexation by a ditopic phenanthroline-azamacrocyclic scorpion-like receptor

Gonzalez, J., Gavara, R., Gadea, O., Blasco, S., García-España, E. & Pina, F., 14 Feb 2012, In: Chemical Communications. 48, 14, p. 1994-6 3 p.

Chemistry and applications of flavylium compounds: A handful of colours

Pina, F., Melo, M. J., Laia, C. A. T., Parola, A. J. & Lima, J. C., 21 Jan 2012, In: Chemical Society Reviews. 41, 2, p. 869-908 40 p.

Complete resolution of the reaction Rates of flavylium Networks. The role played by 2-phenyl-2H-chromen-4-ol and the hydroxyl attack to the quinoidal Base

Petrov, V. & Pina, F., 1 Jan 2012, In: Journal Of Mathematical Chemistry. 50, 4, p. 1003-1019

Isomerization between 2-(2,4-Dihydroxystyryl)-1-benzopyrylium and 7-Hydroxy-2-(4-hydroxystyryl)-1-benzopyrylium

Petrov, V., Parola, A. J. & Pina, F., 1 Jan 2012, In: Journal of Physical Chemistry A. 116, 31, p. 8107-18

Photochemistry of 2-(4-hydroxystyryl)-1-naphthopyrylium.

Gavara, R., Leydet, Y., Petrov, V. & Pina, F., 1 Jan 2012, In: Photochemical & photobiological sciences : Official journal of the European Photochemistry Association and the European Society for Photobiology. 11, 11, p. 1691-1699

Photochromism of flavylium systems. An overview of a versatile multistate system

Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2012, In: Dyes and Pigments. 92, 2, p. 877-889

Synthesis, Characterization and Photochromism of 3'-Butoxyflavylium Derivatives

Gago, S., Petrov, V., Parola, A. J. & Pina, F., 1 Jan 2012, In: Journal of Photochemistry and Photobiology A: Chemistry. 244, NA, p. 54-64

The effect of Self-Aggregation on the Determination of the Kinetic and Thermodynamic Constants of the Network of Chemical Reactions in 3-Glucoside Anthocyanins

Leydet, Y., Gavara, R., Petrov, V., Diniz, A. M., Parola, A. J., Lima, J. C. & Pina, F., 1 Jan 2012, In: Phytochemistry. 83, NA, p. 125-135

Thermodynamic and fluorescence emission properties of the Zn(II), Cd(II) and Pb(II) complexes with a new branched phenanthroline bearing two triamine arms with terminal naphthalene groups

Bazzicalupi, C., Biagini, S., Bianchi, A., Faggi, E., Giorgi, C., Gratteri, P., Pina, F. & Valtancoli, B., 1 Jan 2012, In: Inorganica Chimica Acta. 381, NA, p. 229-235

Unidirectional switching between two flavylium reaction networks by the action of alternate stimuli of acid and base.

Gago, S., Petrov, V., Diniz, A. M., Parola, A. J., Cunha-Silva, L. & Pina, F., 1 Jan 2012, In: Journal of Physical Chemistry A. 116, 1, p. 372-80

Chemical Behavior of Methylpyranomalvidin-3-O-glucoside in Aqueous Solution Studied by NMR and UV-Visible Spectroscopy

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2011, In: Journal of Physical Chemistry B. 115, 6, p. 1538-1545

Electrochromic and magnetic ionic liquids

Branco, L. A. A. F. C. & Pina, F. J. D. S., 1 Jan 2011, In: Chemical Communications. 47, 8, p. 2300-2302

Multistate/Multifunctional Molecular-Level Systems: Photochromic Flavylium Compounds

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2011, *Molecular Switches*. Feringa, B. L. & Browne, W. R. (eds.). second ed. Germany: Wiley-vch, p. 181-222 (Wiley Series in Renewable Resources).

Phase-Dependent Photochromism of a Lactone-Stabilized Chromene from a Flavylium Reaction Network

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2011, In: Chemistry - A European Journal. 17, 13, p. 3663-3671

Phase transition thermochromism based on C-H acidity of 4-alkylflavylium compounds in Pluronic F-127

Avó, J., Parola, A. J., Lima, J. C., Pina, F. & Cunha-Silva, L., 1 Jan 2011, In: *Journal Of Materials Chemistry*. 21, 41, p. 16628-16637

Photochromism in Ionic Liquids

Branco, L. A. A. F. C. & Pina, F. J. D. S., 1 Jan 2011, *Ionic Liquids, Theory and Applications*. na: InTech, p. 137-166

Photochromism of naphthoflavylium. On the role of 4-OH hemiketal in flavylium network

Pina, F. J. D. S., 1 Jan 2011, In: *Journal of Photochemistry and Photobiology A: Chemistry*. 220, 1, p. 4-10

Photophysical Study of Naphthalenophanes: Evidence of Adduct Formation with Molecular Oxygen

Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2011, In: *Journal of Physical Chemistry A*. 115, 2, p. 123-127

Synthesis and Characterization of a Symmetric Bis(7-hydroxyflavylium) Containing a Methyl Viologen Bridge

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2011, In: *Chemistry - A European Journal*. 17, 23, p. 6359-6368

Solid-state electrochromic devices using pTMC/PEO blends as polymer electrolytes

Barbosa, P. C., Rodrigues, L. C., Silva, M. M., Smith, M. J., Parola, A. J., Pina, F. & Pinheiro, C., 25 Jan 2010, In: *Electrochimica Acta*. 55, 4, p. 1495-1502 8 p.

Analytical resolution of the reaction rates of flavylium network by Laplace transform

Pina, F. J. D. S., 1 Jan 2010, In: *Journal Of Mathematical Chemistry*. 47, 3, p. 1005-1026

Anatase as an alternative application for preventing biodeterioration of mortars: Evaluation and comparison with other biocides

Dinis, M. F. M. A. D. M. & Pina, F. J. D. S., 1 Jan 2010, In: *International Biodeterioration & Biodegradation*. 64, 5, p. 388-396

Application of Titanium Dioxide Sol-gel Coatings on Historic Tiles: An Approach to Prevent Biodeterioration.

Leal, N. G. F. D. F., Veiga, J. P. B. & Pina, F. J. D. S., 1 Jan 2010, *NA*. p. 283-284

Binding of H⁺ and Zn(II) ions with a new fluorescent macrocyclic phenanthrolineophane

Pina, F. J. D. S., 1 Jan 2010, In: *Dalton Transactions*. 39, 42, p. 10128-10136

Characterization of the 4'-hydroxynaphthoflavylium network of chemical reactions

Pina, F. J. D. S., 1 Jan 2010, In: *Photochemical & Photobiological Sciences*. 9, 3, p. 298-303

Chromogenic Materials Based on 2-Phenyl-1-benzopyrylium: From Anthocyanins to Synthetic Flavylium Compounds

Parola, A. J. D., Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2010, *Chromic Materials and their Applications*. Somani, P. R. (ed.). n/a: Applied Science Innovations Private Limited, p. n/d

Establishment of the Chemical Equilibria of Different Types of Pyranoanthocyanins in Aqueous Solutions: Evidence for the Formation of Aggregation in Pyranomalvidin-3-O-coumaroylglucoside-(+)-catechin

Pina, F. J. D. S., 1 Jan 2010, In: *Journal of Physical Chemistry B*. 114, 41, p. 13232-13240

Formation of a leuco Spirolactone from 4-(2-Carboxyphenyl)-7-diethylamino-4'-dimethylamino-1-benzopyrylium: Design of a Phase-Change Thermochromic System Based on a Flavylium Dye

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2010, In: *Chemistry - A European Journal*. 16, 26, p. 7760-7766

Hydroxypyridinechromene and Pyridinechalcone: Two Coupled Photochromic Systems

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2010, In: *Chemistry - A European Journal*. 16, 2, p. 545-555

Solid-State Electrochromic Cells Based on [M(salen)]-Derived Electroactive Polymer Films

Parola, A. J. D., DQ Group Author & Pina, F. J. D. S., 1 Jan 2010, In: *Electrochemical And Solid State Letters*. 13, 9, p. J114J118

Supramolecular host-guest flavylum-loaded zeolite L hybrid materials: network of reactions of encapsulated 7,4'-dihydroxyflavylium

Parola, A. J. D., DQ Group Author & Pina, F. J. D. S., 1 Jan 2010, In: *Photochemical & Photobiological Sciences*. 9, 7, p. 991-995

Thermodynamic and Kinetic Properties of a Red Wine Pigment: Catechin-(4,8)-malvidin-3-O-glucoside

Pina, F. J. D. S., 1 Jan 2010, In: *Journal of Physical Chemistry B*. 114, 42, p. 13487-13496

Luminescent and chromogenic molecular probes based on polyamines and related compounds

Lodeiro, C. & Pina, F., 1 May 2009, In: *Coordination Chemistry Reviews*. 253, 9-10, p. 1353-1383 31 p.

Anthocyanins, nature's glamorous palette

Pina, F. J. D. S. & Melo, M. J., 1 Jan 2009, *Handbook of Natural Colorants*. Bechtold, T. & Mussak, R. (eds.). United Kingdom: John Wiley & Sons, p. 135-150 (Wiley Series in Renewable Resources).

Effect of Water/Carboxymethylcellulose Gel on the Excimer Formation of Polyamine Ligands Functionalized with Naphthalene

Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2009, In: *Journal of Physical Chemistry B*. 113, 47, p. 15455-15459

Electrochromism of Crystal Violet Lactone in the presence of Fe(III)/Fe(II) redox pair

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2009, In: *Electrochimica Acta*. 54, 23, p. 5593-5597

Flash photolysis and stopped flow studies of the 2'-methoxyflavylium network in aq. acidic and alkaline solution

Parola, A. J. D., DQ Group Author & Pina, F. J. D. S., 1 Jan 2009, In: *Dyes and Pigments*. 80, 1, p. 149-155

Intrinsically photochromic ionic liquids

Branco, L. A. A. F. C. & Pina, F. J. D. S., 1 Jan 2009, In: *Chemical Communications*. n/a, 41, p. 6204-6206

Multiresponsive chromogenic systems operated by light and electrical inputs

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2009, In: *New Journal of Chemistry*. 33, 10, p. 2144-2147

On the Mechanism of Photochromism of 4'-N,N-Dimethylamino-7-hydroxyflavylium in Pluronic F127

Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2009, In: *Journal of Physical Chemistry B*. 113, 32, p. 11134-11146

Photochemistry of 7-Hydroxy-2-(4-hydroxystyryl)-1-benzopyrylium and Related Compounds

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2009, In: *Journal of Physical Chemistry B*. 113, 3, p. 719-727

Photochromism of 7,4'-Dihydroxyflavylium in an AOT Reversed Micelle System

Laia, C. A. T., DQ Group Author & Pina, F. J. D. S., 1 Jan 2009, In: *Langmuir*. 25, 1, p. 594-601

Specific Supramolecular Interactions between Zn²⁺-Salophen Complexes and Biologically Relevant Anions

Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2009, In: *Inorganic Chemistry*. 48, 13, p. 6229-6235

The synthesis and reaction network of 2-styryl-1-benzopyrylium salts: An unexploited class of potential colorants

Parola, A. J. D., DQ Group Author & Pina, F. J. D. S., 1 Jan 2009, In: *Dyes and Pigments*. 81, 1, p. 69-79

Flavylium chromophores as species markers for dragon's blood resins from *Dracaena* and *Daemonorops* trees

Sousa, M. M., Melo, M. J., Parola, A. J., Seixas de Melo, J. S., Catarino, F., Pina, F., Cook, F. E. M., Simmonds, M. S. J. & Lopes, J. A., 31 Oct 2008, In: *Journal Of Chromatography A*. 1209, 1-2, p. 153-161 9 p.

Use of fluorescence spectroscopy to study polymeric materials with porous structure based on imprinting by self-assembled fibrillar networks

Burguete, M. I., Galindo, F., Gavara, R., Izquierdo, M. A., Lima, J. C., Luis, S. V., Parola, A. J. & Pina, F., 2 Sept 2008, In: *Langmuir*. 24, 17, p. 9795-9803 9 p.

Interaction of polyamine macrocycles with Zn(II) and ATP in aqueous solution. Binary and ternary systems. A potentiometric, NMR and fluorescence emission study

Bazzicalupi, C., Bencini, A., Bianchi, A., Danesi, A., Faggi, E., Giorgi, C., Lodeiro, C., Oliveira, E., Pina, F. & Valtancoli, B., 1 Sept 2008, In: *Inorganica Chimica Acta*. 361, 12-13, p. 3410-3419 10 p.

Anion detection by fluorescent Zn(II) complexes of functionalized polyamine ligands

Rodríguez, L., Lima, J. C., Parola, A. J., Pina, F., Meitz, R., Aucejo, R., Garcia-España, E., Llinares, J. M., Soriano, C. & Alarcón, J., 21 Jul 2008, In: *Inorganic Chemistry*. 47, 14, p. 6173-6183 11 p.

Photochromic soft materials: Flavylium compounds incorporated into pluronic F-127 hydrogel matrixes

Pina, F. & Hatton, T. A., 18 Mar 2008, In: *Langmuir*. 24, 6, p. 2356-2364 9 p.

2'-Hydroxyflavylium: introducing flavanones into the flavylium network of chemical reactions

Petrov, V., Gomes, R., Parola, A. J., Jesus, A., Laia, C. A. T. & Pina, F., 21 Jan 2008, In: *Tetrahedron*. 64, 4, p. 714-720 7 p.

The use of microspectrofluorimetry for the characterization of lake pigments

Melo, M. J., Schäfer, S., de Melo, J. S. S., Pina, F., van den Berg, K. J. & Burnstock, A., 15 Jan 2008, In: *Talanta*. 74, 4, p. 922-929 8 p.

A photochemical study on the blue dye indigo: from solution to ancient Andean textiles

Parola, A. J. D., Sousa, M. M. F. D., Pina, F. J. D. S. & Melo, M. J., 1 Jan 2008, In: *Photochemical & Photobiological Sciences*. 7, 11, p. 1353-1359

Electrocolorimetry of electrochromic materials on flexible ITO electrodes

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2008, In: *Solar Energy Materials and Solar Cells*. 92, 8, p. 980-985

Water-soluble fluorescent chemosensors: in tune with protons

Lodeiro, C., Parola, A. J. D., Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 2008, *Fluorescence of Supramolecules, Polymers, and Nanosystems*. Berberan-Santos, M. N. (ed.). Berlin, Heidelberg: Springer, p. 117-149 (Springer Series on Fluorescence; no. 4).

Identification of 7,4'-dihydroxy-5-methoxyflavylium in "dragon's blood": To be or not to be an anthocyanin

Melo, M. J., Sousa, M., Parola, A. J., Melo, J. S. S. D., Catarino, F., Marçalo, J. & Pina, F., 21 Jun 2007, In: *Chemistry - A European Journal*. 13, 5, p. 1417-1422 6 p.

Photochromism of 7-(N,N-diethylamino)-4'-hydroxyflavylium in a water-ionic liquid biphasic system

Pina, F. J. D. S., Parola, A. J., Melo, M. J., Laia, C. A. T. & Afonso, C. A. M., 8 Feb 2007, In: *Chemical Communications*. 16, p. 1608-1610 3 p.

Effect of SDS micelles on the reactivity of 4'-methoxyflavylium ion: A stopped-flow and photochemical study

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2007, In: *Journal of Photochemistry and Photobiology A: Chemistry*. 185, 2-3, p. 383-390

Efficient photochromism from the network of chemical reactions of 7,4'-dihydroxyflavylium in CTAB micelles

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2007, In: *Photochemical & Photobiological Sciences*. 6, 9, p. 1003-1009

Multistate reaction kinetics of 6-hydroxy-4'-(dimethylamino)flavylium driven by pH. A stopped-flow study

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2007, In: *Organic & Biomolecular Chemistry*. 5, 1, p. 69-77

Promoting photochromism on flavylium derived 2-hydroxychalcones in aqueous solutions by addition of CTAB micelles

Parola, A. J. D., Laia, C. A. T. & Pina, F. J. D. S., 1 Jan 2007, In: *Journal of Physical Chemistry B*. 111, 42, p. 12059-12065

Substitution and solvent effects in the chalcones isomerization barrier of flavylium photochromic systems

Parola, A. J. D., Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2007, In: *Photochemical & Photobiological Sciences*. 6, 4, p. 381-385

Synthesis and photophysical properties of dansyl-based polyamine ligands and their Zn(II) complexes

Parola, A. J. D., Lima, J. C. D. S. S. E. P. D. & Pina, F. J. D. S., 1 Jan 2007, In: *Inorganica Chimica Acta*. 360, 3, p. 1200-1208

The chemistry of 6-hydroxyflavylium: zwitterionic base and p-quinoidal chalcones. A multiswitchable system operated by proton, electron and photon inputs

Parola, A. J. D. & Pina, F. J. D. S., 1 Jan 2007, In: *Photochemical & Photobiological Sciences*. 6, 4, p. 372-380

Solvent effects on the thermal and photochemical reactions of 4'-iodo-8-methoxyflavylium and their consequences on the coloring phenomena caused by anthocyanins in plants

Gomes, R., Parola, A. J., Lima, J. C. & Pina, F., 16 Oct 2006, In: *Chemistry - A European Journal*. 12, 30, p. 7906-7912 7 p.

Erratum: Tuning the photochromic properties of a flavylium compound by pH (*European Journal of Organic Chemistry* (2006) (304-312))

Moncada, M. C., Pina, F., Roque, A., Jorge Parola, A., Maestri, M. & Balzani, V., 13 Oct 2006, In: *European Journal of Organic Chemistry*. 20, 1 p.

Specific interaction of citrate with bis(fluorophoric) bibrachial lariat aza-crown in comparison with the other components of the Krebs cycle

Clares, M. P., Lodeiro, C., Fernández, D., Parola, A. J., Pina, F., García-España, E., Soriano, C. & Tejero, R., 21 Sept 2006, In: *Chemical Communications*. 36, p. 3824-3826 3 p.

Basicity and coordination properties of a new phenanthroline-based bis-macrocyclic receptor

Bazzicalupi, C., Bencini, A., Bianchi, A., Borsari, L., Danesi, A., Giorgi, C., Lodeiro, C., Mariani, P., Pina, F., Santarelli, S., Tamayo, A. & Valtancoli, B., 30 Aug 2006, In: *Dalton Transactions*. 33, p. 4000-4010 11 p.

Coordination features of a terpyridine-containing polyamine receptor. Effect of protonation on the photophysical properties of the complexes

Bazzicalupi, C., Bencini, A., Bianchi, A., Borsari, L., Danesi, A., Giorgi, C., Mariani, P., Pina, F., Santarelli, S. & Valtancoli, B., 1 Jan 2006, In: *Dalton Transactions*. 48, p. 5743-5752 10 p.

Spectroscopy and coordination chemistry of a new bisnaphthalene- bisphenanthroline ligand displaying a sensing ability for metal cations

Pina, J., De Melo, J. S., Pina, F., Lodeiro, C., Lima, J. C., Parola, A. J., Soriano, C., Clares, M. P., Albelda, M. T., Aucejo, R. & García-España, E., 17 Oct 2005, In: *Inorganic Chemistry*. 44, 21, p. 7449-7458 10 p.

Bio-inspired multistate networks responsive to light, pH and thermal inputs - An example of a multistate system operating through different algorithms

Giestas, L., Folgosa, F., Lima, J. C., Parola, A. J. & Pina, F., 26 Sept 2005, In: *European Journal of Organic Chemistry*. 19, p. 4187-4200 14 p.

Water/humidity and ammonia sensor, based on a polymer hydrogel matrix containing a fluorescent flavylum compound
Galindo, F., Lima, J. C., Luis, S. V., Melo, M. J., Jorge Parola, A. & Pina, F., 21 Jul 2005, In: Journal Of Materials Chemistry. 15, 27-28, p. 2840-2847 8 p.

A zinc(II)-based receptor for ATP binding and hydrolysis

Bazzicalupi, C., Bencini, A., Bianchi, A., Danesi, A., Giorgi, C., Lodeiro, C., Pina, F., Santarelli, S. & Valtancoli, B., 28 May 2005, In: Chemical Communications. 20, p. 2630-2632 3 p.

Write-read-erase molecular-switching system trapped in a polymer hydrogel matrix

Galindo, F., Lima, J. C., Luis, S. V., Parola, A. J. & Pina, F., 1 Apr 2005, In: Advanced Functional Materials. 15, 4, p. 541-545 5 p.

A new ZnII tweezer pyridine-naphthalene system - An off-on-off system working in a biological pH window

Aucejo, R., Alarcón, J., García-España, E., Llinares, J. M., Marchin, K. L., Soriano, C., Lodeiro, C., Bernardo, M. A., Pina, F., Pina, J. & Seixas de Melo, J. S., 2005, In: European Journal of Inorganic Chemistry. 21, p. 4301-4308 8 p.

Fluorescent type II materials from naphthylmethyl polyamine precursors

Alarcón, J., Aucejo, R., Albelda, M. T., Alves, S., Clares, M. P., García-España, E., Lodeiro, C., Marchin, K. L., Parola, A. J., Pina, F., Melo, J. S. D. & Soriano, C., 1 Dec 2004, In: Supramolecular Chemistry. 16, 8, p. 573-580 8 p.

Thermal and photochemical properties of 4'-hydroxyflavylium in water-ionic liquid biphasic systems

Fernandez, D., Parola, A. J., Branco, L. C., Afonso, C. A. M. & Pina, F., 1 Dec 2004, In: Journal of Photochemistry and Photobiology A: Chemistry. 168, 3, p. 185-189 5 p.

Multistate properties of 7-(N,N-diethylamino)-4'-hydroxyflavylium. An example of an unidirectional reaction cycle driven by pH

Moncada, M. C., Fernández, D., Lima, J. C., Jorge Parola, A., Lodeiro, C., Folgosa, F., João Melo, M. & Pina, F., 7 Oct 2004, In: Organic & Biomolecular Chemistry. 2, 19, p. 2802-2808 7 p.

Two coupled photochromic systems of 3',4'-(methylenedioxy) flavylium: kinetic and thermodynamic characterization

Fernández, D., Folgosa, F., Parola, A. J. & Pina, F., 1 Oct 2004, In: New Journal of Chemistry. 28, 10, p. 1221-1226 6 p.

Synthesis and H⁺, Cu²⁺, and Zn²⁺ coordination behavior of a bis(fluorophoric) bibrachial lariat aza-crown

Clares, M. P., Aguilar, J., Aucejo, R., Lodeiro, C., Albelda, M. T., Pina, F., Lima, J. C., Parola, A. J., Pina, J., Melo, J. S. D., Soriano, C. & García-España, E., 20 Sept 2004, In: Inorganic Chemistry. 43, 19, p. 6114-6122 9 p.

New terpyridine-containing macrocycle for the assembly of dimeric Zn(II) and Cu(II) complexes coupled by bridging hydroxide anions and π -stacking interactions

Bazzicalupi, C., Bencini, A., Berni, E., Bianchi, A., Danesi, A., Giorgi, C., Valtancoli, B., Lodeiro, C., Lima, J. C., Pina, F. & Bernardo, M. A., 9 Aug 2004, In: Inorganic Chemistry. 43, 16, p. 5134-5146 13 p.

A fluorescent chemosensor for Zn(II). Exciplex formation in solution and the solid state

Bencini, A., Berni, E., Bianchi, A., Fornasari, P., Giorgi, C., Lima, J. C., Lodeiro, C., Melo, M. J., De Melo, J. S., Parola, A. J., Pina, F., Pina, J. & Valtancoli, B., 21 Jul 2004, In: Dalton Transactions. 14, p. 2180-2187 8 p.

Thermal and photochemical properties of 4',7-dihydroxyflavylium in water-ionic liquid biphasic systems: a write-read-erase molecular switch

Pina, F., Lima, J. C., Parola, A. J. & Afonso, C. M., 12 Mar 2004, In: Angewandte Chemie - International Edition. 43, 12, p. 1525-1527 3 p.

Protonation and coordination properties towards Zn(ii), Cd(ii) and Hg(ii) of a phenanthroline-containing macrocycle with an ethylamino pendant arm

Bazzicalupi, C., Bencini, A., Berni, E., Bianchi, A., Borsari, L., Giorgi, C., Valtancoli, B., Lodeiro, C., Lima, J. C., Parola, A. J. & Pina, F., 9 Feb 2004, In: Journal of the Chemical Society. Dalton Transactions. 4, 4, p. 591-597 7 p.

Tuning the Photochromic Properties of a Flavylium Compound by pH

Moncada, M. C., Pina, F., Roque, A., Parola, A. J., Maestri, M. & Balzani, V., 16 Jan 2004, In: European Journal of Organic Chemistry. 2, p. 304-312 9 p.

Ground and excited-state electronic interactions in poly(propylene amine) dendrimers functionalized with naphthyl units: Effect of protonation and metal complexation

Pina, F. J. D. S., 1 Jan 2004, In: ChemPhysChem. 5, 4, p. 473-480

Multistate/Multifunctional Behaviour of 4'-Hydroxy-6-nitroflavylium: A Write-Lock/Read/Unlock/Enable-Erase/Erase Cycle Driven by Light and pH Stimulation

Moncada, M. C., Parola, A. J., Lodeiro, C., Pina, F., Maestri, M. & Balzani, V., 2004, In: Chemistry - A European Journal. 10, 6, p. 1519-1526 8 p.

Energetics and Dynamics of Naphthalene Polyaminic Derivatives. Influence of Structural Design in the Balance Static vs Dynamic Excimer Formation

Seixas de Melo, J., Pina, J., Pina, F., Lodeiro, C., Parola, A. J., Lima, J. C., Albelda, M. T., Clares, M. P., Garcia-España, E. & Soriano, C., 25 Dec 2003, In: Journal of Physical Chemistry A. 107, 51, p. 11307-11318 12 p.

Complexation of aluminum(III) by anthocyanins and synthetic flavylium salts: a source for blue and purple color

Moncada, M. C., Moura, S., Melo, M. J., Roque, A., Lodeiro, C. & Pina, F., 3 Dec 2003, In: Inorganica Chimica Acta. 356, p. 51-61 11 p.

Potentiometric, NMR, and fluorescence-emission studies on the binding of adenosine 5'-triphosphate (ATP) by open-chain polyamine receptors containing naphthylmethyl and/or anthrylmethyl groups

Albelda, M. T., Aguilar, J., Alves, S., Aucejo, R., Díaz, P., Lodeiro, C., Lima, J. C., García-España, E., Pina, F. & Soriano, C., 21 Oct 2003, In: Helvetica Chimica Acta. 86, 9, p. 3118-3135 18 p.

Supramolecular interactions of hexacyanocobaltate(III) with polyamine receptors containing a terminal anthracene sensor

Rodríguez, L., Alves, S., Lima, J. C., Parola, A. J., Pina, F., Soriano, C., Albelda, T. & García-España, E., 31 Jul 2003, In: Journal of Photochemistry and Photobiology A: Chemistry. 159, 3, p. 253-258 6 p.

Linear ditopic acetylide gold or mercury complexes: Synthesis and photophysical studies X-ray crystal structure of PPh₄[Au(C≡CC₅H₄N)₂]

Ferrer, M., Rodríguez, L., Rossell, O., Pina, F., Lima, J. C., Bardia, M. F. & Solans, X., 15 Jul 2003, In: Journal of Organometallic Chemistry. 678, 1-2, p. 82-89 8 p.

Intramolecular excimer formation in a tripodal polyamine receptor containing three naphthalene fluorophores

Albelda, M. T., García-España, E., Gil, L., Lima, J. C., Lodeiro, C., Seixas de Melo, J., Melo, M. J., Jorge Parola, A., Pina, F. & Soriano, C., 10 Jul 2003, In: Journal of Physical Chemistry B. 107, 27, p. 6573-6578 6 p.

Cu(II) and Ni(II) complexes with dipyrindine-containing macrocyclic polyamines with different binding units

Anda, C., Bazzicalupi, C., Bencini, A., Bianchi, A., Fornasari, P., Giorgi, C., Valtancoli, B., Lodeiro, C., Parola, A. J. & Pina, F., 7 Apr 2003, In: Dalton Transactions. 7, p. 1299-1307 9 p.

Multistate/multifunctional systems. A thermodynamic, kinetic, and photochemical investigation of the 4'-dimethylaminoflavylium compound

Roque, A., Lodeiro, C., Pina, F., Maestri, M., Dumas, S., Passaniti, P. & Balzani, V., 29 Jan 2003, In: Journal of the American Chemical Society. 125, 4, p. 987-994 8 p.

Protonation and Zn(II) coordination by dipyrindine-containing macrocycles with different molecular architecture: A case of pH-controlled metal jumping outside-inside the macrocyclic cavity

Lodeiro, C., Parola, A. J., Pina, F., Bazzicalupi, C., Bencini, A., Bianchi, A., Giorgi, C., Masotti, A. & Valtancoli, B., 16 Dec 2002, In: Inorganic Chemistry. 41, 25, p. 6936-6936 1 p.

Long range electron transfer quenching in polyamine chains bearing a terminal naphthalene unit

Pina, F., Lima, J. C., Lodeiro, C., Melo, J. S. D., Diaz, P., Albelda, M. T. & Garcia-Espana, E., 5 Sept 2002, In: Journal of Physical Chemistry A. 106, 35, p. 8207-8212

Erratum: Switching from intramolecular energy transfer to intramolecular electron transfer by the action of pH and Zn²⁺ co-ordination (Chemical Physics Letters (2002) vol. 353 (63-68) S0009261401014142)

Pina, F., 13 Aug 2002, In: Chemical Physics Letters. 362, 1-2, p. 179-180 2 p.

Photochromic properties of 3-methyl-substituted flavylum salts

Roque, A., Lodeiro, C., Pina, F., Maestri, M., Ballardini, R. & Balzani, V., Aug 2002, In: European Journal of Organic Chemistry. 16, p. 2699-2709 11 p.

Micelle effects on multistate/multifunctional systems based on photochromic flavylum compounds. The case of luteolinidin

Melo, M. J., Moura, S., Maestri, M. & Pina, F., 17 Jul 2002, In: Journal Of Molecular Structure. 612, 2-3, p. 245-253 9 p.

Photoactivity and pH sensitivity of methyl orange functionalized poly(propyleneamine) dendrimers

Dirksen, A., Zuidema, E., Williams, R. M., De Cola, L., Kauffmann, C., Vögtle, F., Roque, A. & Pina, F., 26 Mar 2002, In: Macromolecules. 35, 7, p. 2743-2747 5 p.

Switching from intramolecular energy transfer to intramolecular electron transfer by the action of pH and Zn²⁺ co-ordination

Teresa Albelda, M., Díaz, P., García-España, E., Lima, J. C., Lodeiro, C., Melo, J. S. D., Jorge Parola, A., Pina, F. & Soriano, C., 13 Feb 2002, In: Chemical Physics Letters. 353, 1-2, p. 63-68 6 p.

Energy transfer between polyamine chains bearing naphthalene terminal units and K₃[Co(CN)₆]: an example of a molecular photoreactor

Arranz, P., Albelda, M. T., Garcia-España, E., Lima, J. C., Lodeiro, C., Melo, J. S. D., Parola, A. J. & Pina, F., 2002, In: Journal of the Chemical Society, Dalton Transactions. 15, p. 3024-3028 5 p.

Ground and excited state properties of polyamine chains bearing two terminal naphthalene units

Melo, J. S. D., Albelda, M. T., Diaz, P., Garcia-Espana, E., Lodeiro, C., Alves, S., Lima, J. C., Pina, F. & Soriano, C., 2002, In: Journal Of The Chemical Society-Perkin Transactions 2. 5, p. 991-998

Exploring the photocatalytic properties and the long-lifetime chemosensor ability of Cl₂[Ru(Bpy)₂L] (L = 2,5,8,11,14-pentaaza[15]-2,2'-bipyridilophane)

Lodeiro, C., Pina, F., Parola, A. J., Bencini, A., Bianchi, A., Bazzicalupi, C., Ciattini, S., Giorgi, C., Masotti, A., Valtancoli, B. & Seixas de Melo, J., 17 Dec 2001, In: Inorganic Chemistry. 40, 26, p. 6813-6819 7 p.

Coordination properties of a polyamine cryptand with two different binding moieties. A case of a pH-modulated antenna device based on a new Eu(III) cryptate complex

Bazzicalupi, C., Pina, F., Bencini, A., Berni, E., Bianchi, A., Giorgi, C., Fusi, V., Valtancoli, B., Lodeiro, C. & Roque, A., 19 Nov 2001, In: Inorganic Chemistry. 40, 24, p. 6172-6179 8 p.

Metal-metal interaction in polynuclear complexes with cyanide bridges: Synthesis, characterisation, and theoretical studies

Calhorda, M. J., Drew, M. G. B., Félix, V., Fonseca, L. P., Gamelas, C. A., Godinho, S. S. M. C., Gonçalves, I. S., Hunstock, E., Lopes, J. P., Jorge Parola, A., Pina, F., Romão, C. C. & Gil Santos, A., 24 Aug 2001, In: Journal of Organometallic Chemistry. 632, 1-2, p. 94-106 13 p.

Micelle effect on ground and excited state proton transfer reactions involving the 4-methyl-7-hydroxyflavylium cation

Pina, F., Melo, M. J., Alves, S., Ballardini, R., Maestri, M. & Passaniti, P., 9 Aug 2001, In: New Journal of Chemistry. 25, 5, p. 747-752 6 p.

Polyamines containing Naphtyl Groups as pH-Regulated Molecular Machines Driven by Light

Albelda, M. T., Bernardo, M. A., Díaz, P., García-España, E., Melo, M. J., Pina, F. J. D. S., Soriano, C. & Luis, S. V., 26 Jul 2001, In: Chemical Communications. 16, p. 1520-1521

Protonation and Zn(II) coordination by dipyrindine-containing macrocycles with different molecular architecture. A case of pH-controlled metal jumping outside - Inside the macrocyclic cavity

Lodeiro, C., Parola, A. J., Pina, F., Bazzicalupi, C., Bencini, A., Bianchi, A., Giorgi, C., Masotti, A. & Valtancoli, B., 18 Jun 2001, In: *Inorganic Chemistry*. 40, 13, p. 2968-2975 8 p.

Open-chain polyamine ligands bearing an anthracene unit - Chemosensors for logic operations at the molecular level

Alves, S., Pina, F., Albelda, M. T., García-España, E., Soriano, C. & Luis, S. V., 1 Jan 2001, In: *European Journal of Inorganic Chemistry*. 2, p. 405-412 8 p.

Photochemical- and pH-switching Properties of a New Photoelastic Ligand Based Upon Azobenzene. Basicity and Anion Binding

Bencini, A., Bianchi, A., Giorgi, C., Romagnoli, E., Lodeiro, C., Saint-Maurice, A., Pina, F. & Valtancoli, B., 1 Jan 2001, In: *Supramolecular Chemistry*. 13, 2, p. 277-285 9 p.

Polyamine Linear Chains Bearing Two Identical Terminal Aromatic Units. Evidence for a Photo Induced Bending Movement

Bernardo, M. A., Alves, S., Pina, F., Melo, J. S. D., Albelda, M. T., Garcia-España, E., Llinares, J. M., Soriano, C. & Luis, S. V., 1 Jan 2001, In: *Supramolecular Chemistry*. 13, 3, p. 435-445 11 p.

Light and pH switching between the various forms of the 4'-methylflavylium cation

Maestri, M., Pina, F., Roque, A. & Passaniti, P., 24 Oct 2000, In: *Journal of Photochemistry and Photobiology A: Chemistry*. 137, 1, p. 21-28 8 p.

A novel fluorescent chemosensor exhibiting exciplex emission. An example of an elementary molecular machine driven by pH and by light

Bencini, A., Bianchi, A., Lodeiro, C., Masotti, A., Parola, A. J., Pina, F., De Melo, J. S. & Valtancoli, B., 7 Sept 2000, In: *Chemical Communications*. 17, p. 1639-1640 2 p.

Artificial chemical systems capable of mimicking some elementary properties of neurons

Pina, F., Melo, M. J., Maestri, M., Passaniti, P. & Balzani, V., 10 May 2000, In: *Journal of the American Chemical Society*. 122, 18, p. 4496-4498 3 p.

pH modulation of the luminescence emission of a new europium cryptate complex

Bazzicalupi, C., Bencini, A., Bianchi, A., Giorgi, C., Fusi, V., Masotti, A., Valtancoli, B., Roque, A. & Pina, F., 7 Apr 2000, In: *Chemical Communications*. 7, p. 561-562 2 p.

On the red colour of raspberry (*Rubus idaeus*)

Melo, M. J., Moncada, M. C. & Pina, F., 18 Mar 2000, In: *Tetrahedron Letters*. 41, 12, p. 1987-1991 5 p.

Fluorescent chemosensors containing polyamine receptors

Pina, F., Bernardo, M. A. & García-España, E., 1 Jan 2000, In: *European Journal of Inorganic Chemistry*. 10, p. 2143-2157 15 p.

Photochemistry of luteolinidin - "Write-lock-read-unlock-erase" with a natural compound

Pina, F. J. D. S. & Melo, M. J., 1 Jan 2000, In: *Journal of Photochemistry and Photobiology A: Chemistry*. 135, 1, p. 33-39

Effect of protonation and Zn(II) coordination on the fluorescence emission of a phenanthroline-containing macrocycle. An unusual case of "nonemissive" Zn(II) complex

Bazzicalupi, C., Bencini, A., Bianchi, A., Giorgi, C., Fusi, V., Valtancoli, B., Bernardo, M. A. & Pina, F., 1 Dec 1999, In: *Inorganic Chemistry*. 38, 17, p. 3806-3813 8 p.

Photo- and pH-induced transformations of flavylium cation: 'Write-lock- read-unlock-erase' cycles

Pina, F., Melo, M. J., Maestri, M., Passaniti, P., Camaioni, N. & Balzani, V., 1 Nov 1999, In: *European Journal of Organic Chemistry*. 11, p. 3199-3207 9 p.

Macrocyclic Polyamines containing Phenantroline Moieties: Fluorescent Chemosensors for H⁺ and Zn²⁺ ions

Bencini, A., Bernardo, M. A., Bianchi, A., Fusi, V., Giorgi, C., Pina, F. J. D. S. & Valtancoli, B., 20 Oct 1999, In: European Journal of Inorganic Chemistry. 1999, 11, p. 1911-1918

Photochemistry of supramolecular species involving anionic coordination compounds and polyammonium macrocyclic receptors

Pina, F. & Parola, A. J., 1 May 1999, In: Coordination Chemistry Reviews. 185-186, p. 149-165 17 p.

Thermodynamic and fluorescence emission studies on chemosensors containing anthracene fluorophores. Crystal structure of $\{[CuL^1Cl]_2 \cdot 2H_2O [L^1 = N-(3\text{-aminopropyl})-N'-3\text{-(anthracen-9-ylmethyl)aminopropylethane-1,2-diamine}]\}$

Bernardo, M. A., Pina, F., Escuder, B., García-España, E., Godino-Salido, M. L., Latorre, J., Luis, S. V., Ramírez, J. A. & Soriano, C., 21 Mar 1999, In: Journal of the Chemical Society - Dalton Transactions. 6, p. 915-921 7 p.

Photochromic flavylum compounds as multistate/multifunction molecular-level systems

Pina, F., Maestri, M. & Balzani, V., 21 Jan 1999, In: Chemical Communications. 2, p. 107-114 8 p.

Chemosensors displaying pH controlled multistage fluorescence emission

Pina, F., Melo, M. J., Bernardo, M. A., Luis, S. V. & García-España, E., 1 Jan 1999, In: Journal of Photochemistry and Photobiology A: Chemistry. 126, 1-3, p. 65-69 5 p.

Micelle effect on the 'write-lock-read-unlock-erase' cycle of 4'-hydroxyflavylium ion

Roque, A., Pina, F., Alves, S., Ballardini, R., Maestri, M. & Balzani, V., 1 Jan 1999, In: Journal Of Materials Chemistry. 9, 9, p. 2265-2269 5 p.

Selective lithium complexation by photoactive aza-cages bearing the anthracene function

Ciampolini, M., Formica, M., Fusi, V., Saint-Maurice, A., Micheloni, M., Nardi, N., Pontellini, R., Pina, F., Romani, P., Sabatini, A. M. & Valtancoli, B., 1 Jan 1999, In: European Journal of Inorganic Chemistry. 12, p. 2261-2268 8 p.

Tetracarboxylatodirhenium complexes linked by axial cyano bridges to metapentacarbonyl ligands - Synthesis and characterization

Kühn, F. E., Gonçalves, I. S., Lopes, A. D., Lopes, J. P., Romão, C. C., Wachter, W., Mink, J., Hajba, L., Parola, A. J., Pina, F. & Sotomayor, J., 1 Jan 1999, In: European Journal of Inorganic Chemistry. 2, p. 295-301 7 p.

Thermodynamics and fluorescence emission studies on potential molecular chemosensors for ATP recognition in aqueous solution

Albelda, M. T., Bernardo, M. A., Garcia-España, E., Godino-Salido, M. L., Luis, S. V., Melo, M. J., Pina, F. & Soriano, C., 1 Jan 1999, In: Journal of the Chemical Society. Perkin Transactions 2. 11, p. 2545-2549 5 p.

Thermodynamics and kinetics of flavylium salts - Malvin revisited (vol 94, pg 2109, 1998)

Pina, F., 21 Dec 1998, In: JOURNAL OF THE CHEMICAL SOCIETY-FARADAY TRANSACTIONS. 94, 24, p. 3781-3781

Thermodynamic and Steady-State Fluorescence Emission Studies on Metal Complexes of Receptors Containing Benzene Subunits

Bernardo, M. A., Pina, F., García-España, E., Latorre, J., Luis, S. V., Llinares, J. M., Ramírez, J. A. & Soriano, C., 1 Dec 1998, In: Inorganic Chemistry. 37, 16, p. 3935-3942 8 p.

pH-Controlled photochromism of hydroxyflavylium ions

Pina, F., Melo, M. J., Parola, A. J., Maestri, M. & Balzani, V., 1 Oct 1998, In: Chemistry - A European Journal. 4, 10, p. 2001-2007 7 p.

Caffeine interaction with synthetic flavylium salts. A flash photolysis study for the adduct involving 4',7-dihydroxyflavylium

Pina, F., 14 Aug 1998, In: Journal of Photochemistry and Photobiology A: Chemistry. 117, 1, p. 51-59 9 p.

Thermodynamics and kinetics of flavylum salts: Malvin revisited

Pina, F., 7 Aug 1998, In: Journal of the Chemical Society - Faraday Transactions. 94, 15, p. 2109-2116 8 p.

Multistate/multifunctional molecular-level systems: Light and pH switching between the various forms of a synthetic flavylum salt

Pina, F., Roque, A., Melo, M. J., Maestri, M., Belladelli, L. & Balzani, V., 1 Jul 1998, In: Chemistry - A European Journal. 4, 7, p. 1184-1191 8 p.

Synthesis and characterization of binuclear transition metal-rhenium(VII) complexes with bridging cyanide ligands

Gonçalves, I. S., Kühn, F. E., Lopes, A. D., Parola, A. J., Pina, F., Sotomayor, J. & Romão, C. C., 15 Jun 1998, In: Journal of Organometallic Chemistry. 560, 1-2, p. 117-124 8 p.

Ion-pairing co-pigmentation with 4',7-dihydroxyflavylium studied by pulse light jumps

Pina, F. & Roque, A., 31 Mar 1998, In: Journal of Photochemistry and Photobiology A: Chemistry. 114, 1, p. 59-64 6 p.

Supramolecular interactions between $\text{Co}(\text{CN})_5(\text{SO}_3)^{4-}$ and polyammonium macrocyclic receptors

Parola, A. J., Pina, F., Manfrin, M. F. & Moggi, L., 21 Mar 1998, In: Journal of the Chemical Society - Dalton Transactions. 6, p. 1005-1009 5 p.

Excited state proton transfer in synthetic flavylum salts: 4-methyl-7-hydroxyflavylium and 4',7-dihydroxyflavylium Example of a four-level molecular device to invert the population of the excited state

Pina, F., Melo, M. J., Santos, H., Lima, J. C., Abreu, I., Ballardini, R. & Maestri, M., 1 Jan 1998, In: New Journal of Chemistry. 22, 10, p. 1093-1098 6 p.

Modulation of the ligational properties of a new cylindrical macrotricyclic by coupling of photochemical- and pH-switching properties

Bencini, A., Bernardo, M. A., Bianchi, A., Ciampolini, M., Fusi, V., Nardi, N., Parola, A. J., Pina, F. & Valtancoli, B., 1 Jan 1998, In: Journal of the Chemical Society. Perkin Transactions 2. 2, p. 413-418 6 p.

Flash photolysis of 4',7-dihydroxyflavylium perchlorate

Pina, F., Melo, M. J., Ballardini, R., Flamigni, L. & Maestri, M., 1 Dec 1997, In: New Journal of Chemistry. 21, 9, p. 969-976 8 p.

Structural transformations of the synthetic salt 4', 7-dihydroxyflavylium chloride in acid and basic aqueous solutions. Part 1 - Ground state

Pina, F., Benedito, L., Mélo, M. J., Parola, A. J., Lima, J. C. & Maçanita, A. L., 1 Dec 1997, In: Anales De Quimica. 93, 2, p. 111-118 8 p.

Flash photolysis of 4',7-dihydroxyflavylium perchlorate (vol 21, pg 969, 1997)

Pina, F., Melo, M. J., Ballardini, R., Flamigni, L. & Maestri, M., Dec 1997, In: New Journal of Chemistry. 21, 12, p. CP4-CP4

An easy and inexpensive flash spectroscopy experiment

Maestri, M., Ballardini, R., Pina, F. & Melo, M. J., Nov 1997, In: Journal of Chemical Education. 74, 11, p. 1314-1316 3 p.

Electron transfer between $\text{Fe}(\text{CN})_6^{3-}$ and iodide promoted by supercomplexation with a polyammonium macrocycle

Pina, F., Parola, A. J., Saint-Maurice, A., Manfrin, M. F., Moggi, L., Indelli, T. & Scandola, F., 7 Jul 1997, In: Journal Of The Chemical Society-Dalton Transactions. 13, p. 2327-2330

Photochromism of 4'-methoxyflavylium perchlorate. A 'write-lock-read- unlock-erase' molecular switching system

Pina, F., Melo, M. J., Maestri, M., Ballardini, R. & Balzani, V., 18 Jun 1997, In: Journal of the American Chemical Society. 119, 24, p. 5556-5561 6 p.

Photoinduced electron- and energy-transfer processes of biacetyl imprisoned in a hemicarcerand

Parola, A. J., Pina, F., Ferreira, E., Maestri, M. & Balzani, V., 20 Nov 1996, In: Journal of the American Chemical Society. 118, 46, p. 11610-11616 7 p.

Thermodynamic, NMR and photochemical study on the acid-base behaviour of N,N'-dibenzylated polyamines and on their interaction with hexacyanocobaltate(III)

Bernardo, M. A., Guerrero, J. A., García-España, E., Luis, S. V., Llinares, J. M., Pina, F., Ramirez, J. A. & Soriano, C., Nov 1996, In: Journal of the Chemical Society. Perkin Transactions 2. 11, p. 2335-2342 8 p.

Photophysics of supercomplexes. Adduct between Ru(bpy)(CN)(4)(2-) and the [32]ane-N8H88+ polyaza macrocycle

Rampi, M. A., Indelli, M. T., Scandola, F., Pina, F. & Parola, A. J., 22 May 1996, In: Inorganic Chemistry. 35, 11, p. 3355-3361

Photochemistry of 3,4'-dimethoxy-7-hydroxyflavylium chloride: Photochromism and excited-state proton transfer

Pina, F., Benedito, L., Melo, M. J., Parola, A. J. & Bernardo, A., 21 May 1996, In: Journal of the Chemical Society - Faraday Transactions. 92, 10, p. 1693-1699 7 p.

Shape of acid-base fluorescence emission titration curves in the presence of buffer and quenching effects

Melo, M. J., Bernardo, M. A., Melo, E. C. & Pina, F., 21 Mar 1996, In: Journal of the Chemical Society - Faraday Transactions. 92, 6, p. 957-968 12 p.

Control of the Thermal and Photochemical Aquation of the Hexacyanochromate(III) and Aquapentacyanochromate(III) Ions by Formation of a Supramolecular Structure with [32]ane-N₈

Sotomayor, J., Jorge Parola, A., Pina, F., Zinato, E., Riccieri, P., Francesca Manfrin, M. & Moggi, L., 1 Dec 1995, In: Inorganic Chemistry. 34, 26, p. 6532-6537 6 p.

Steady-state fluorescence emission studies on polyazacyclophane macrocyclic receptors and on their adducts with hexacyanocobaltate(III)

Bernardo, M. A., Parola, A. J., Pina, F., Garcia-España, E., Marcelino, V., Luis, S. V. & Miravet, J. F., 1 Dec 1995, In: Journal of the Chemical Society, Dalton Transactions. 6, p. 993-997 5 p.

Partition of Pesticides of the Coumarin Family between Water and Amphiphilic Aggregates

Lopes, A., Melo, J. S. D., Martins, A. J., Maçanita, A. L., Pina, F. S., Wamhoff, H. & Melo, E., 1 Jan 1995, In: Environmental Science and Technology. 29, 3, p. 562-570 9 p.

Supramolecular photochemistry and photophysics. Biacetyl imprisoned in a hemicarcerand

Pina, F., Parola, A. J., Ferreira, E., Maestri, M., Armaroli, N., Ballardini, R. & Balzani, V., 1 Jan 1995, In: Journal of Physical Chemistry. 99, 34, p. 12701-12703 3 p.

Co-pigmentation of anthocyanins through the formation of ion-pairs

Figueiredo, P. & Pina, F., 1995, *POLYPHENOLS 94*. Vol. 69. p. 205-206 2 p. (COLLOQUES DE L INRA).

Formation of anthocyanin ion-pairs: A co-pigmentation effect

Figueiredo, P. & Pina, F., 1 Dec 1994, In: Journal of the Chemical Society, Perkin Transactions 2. 4, p. 775-778 4 p.

Photophysical properties and photodegradation mechanism of 2-(2'-furanyl)-1H-benzimidazole (Fuberidazole)

Melo, M. J., Maçanita, A. L., Melo, E., Wamhoff, H. & Pina, F., 25 Oct 1994, In: Journal of Photochemistry and Photobiology A: Chemistry. 83, 3, p. 237-244 8 p.

Photochromism of the Synthetic 4',7-Dihydroxyflavylium Chloride

Figueiredo, P., Lima, J. C., Santos, H., Maçanita, A. L., Pina, F., Wigand, M. C. & Brouillard, R., 1 Feb 1994, In: Journal of the American Chemical Society. 116, 4, p. 1249-1254 6 p.

Determination of acid-base equilibria of organic pollutants: the steady state fluorescence emission method

Melo, M. J., Melo, E. & Pina, F., 1 Jan 1994, In: Archives of Environmental Contamination and Toxicology. 26, 4, p. 510-520 11 p.

Excited states of anthocyanins: the chalcone isomers of malvidin 3,5-diglucoside

Lima, J. C., Danesh, P., Figueiredo, P., Pina, F. S. & Maçanita, A., 1 Jan 1994, In: Photochemistry And Photobiology. 59, 4, p. 412-418 7 p.

Supramolecular photochemistry and photophysics - 9-cyanoanthracene imprisoned in a hemicarcerand

Parola, A. J., Pina, F., Maestri, M., Armaroli, N. & Balzani, V., 1994, In: New Journal of Chemistry. 18, 3 p.

Photochemical and thermal degradation of anthocyanidins

Furtado, P., Figueiredo, P., das Neves, H. C. & PINA, F., 1 Nov 1993, In: Journal of Photochemistry and Photobiology A: Chemistry. 75, 2, p. 113-118 6 p.

Elucidation of the multiple equilibria of malvin in aqueous solution by One- and two-dimensional NMR

Santos, H., Turner, D. L., Lima, J. C., Figueiredo, P., Pina, F. S. & Maçanita, A. L., 23 Jul 1993, In: Phytochemistry. 33, 5, p. 1227-1232 6 p.

Photochemistry of 2-(2-Furyl)-benzimidazole (Fuberidazole)

Melo, M. J., Pina, F., Maçanita, A. L., Melo, E. C., Herrmann, C., Förster, R., Koch, H. & Wamhoff, H., 1 Oct 1992, In: Zeitschrift fur Naturforschung - Section B Journal of Chemical Sciences. 47, 10, p. 1431-1437 7 p.

Photochemistry of the adduct between $[\text{Co}(\text{CN})_5\text{H}_2\text{O}]^{2-}$ and the polyammonium macrocyclic receptor $[\text{32}] \text{ane-N}_8$: evidence for the supramolecular structure

Jorge Parola, A. & Pina, F., 30 Jun 1992, In: Journal of Photochemistry and Photobiology A: Chemistry. 66, 3, p. 337-343 7 p.

Charge effects on the photochemistry of the $\text{Co}(\text{EDTA})^{-1} \Gamma^{-}$ system in the presence of polyammonium macrocyclic receptors

Pina, F., Parola, A. J., Bencini, A., Micheloni, M., Manfrin, M. F. & Moggi, L., 15 May 1992, In: Inorganica Chimica Acta. 195, 2, p. 139-143 5 p.

Multiequilibria of 2-(2'-furyl)-1H-Benzimidazole Neutral and Protonated Forms in the Presence of Amphiphilic Aggregates

Lopes, A., Andrade Maçanita, A. L. V., Pina, F. J. D. S., Melo, E. & Wamhoff, H., 1992, In: Environmental Science and Technology. 26, 12, p. 2448-2453 6 p.

Application of co-59 NMR to the investigation of interactions between cobalt sepulchrate and various counterions

Sotomayor, J., Santos, H. & Pina, F., Mar 1991, In: Canadian Journal Of Chemistry-Revue Canadienne De Chimie. 69, 3, p. 567-569

Fluorescence spectra and decays of malvidin 3,5-diglucoside in aqueous solutions

Figueiredo, P., Pina, F., Vilas-Boas, L. & Macanita, A. L., 1 Jan 1990, In: Journal of Photochemistry and Photobiology A: Chemistry. 52, 3, p. 411-424 14 p.

Photochemistry of the $\text{Co}(\text{Sep})^{3+} \Gamma^{-}$ system: evaluation of the quantum yield for the photochemical redox reaction of the ion pair

Pina, F., Sotomayor, J. & Moggi, L., 1 Jan 1990, In: Journal of Photochemistry and Photobiology A: Chemistry. 53, 3, p. 411-422 12 p.

Quantum yield determinations on the $[\text{Co}(\text{EDTA})]^{-1} \Gamma^{-}$ system

Pina, F. & Costa, J. C., Aug 1989, In: Journal of Photochemistry and Photobiology A: Chemistry. 48, 2-3, p. 233-242 10 p.

Photodecarboxylation of citrate through ion pair photochemistry: the Co(Sep)³⁺-citratⁿ⁻ (n = 1,2,3) system

Sotomayor, J., Costa, J. C., Mulazzani, Q. G. & Pina, F., 1 Jan 1989, In: Journal of Photochemistry and Photobiology A: Chemistry. 49, 1-2, p. 195-202 8 p.

Photochemistry of Supramolecular systems: Size and charge effects in the photoaquation of adducts of the Hexacyanocobaltate (III) anion with polyammonium Macrocylic receptors

Pina, F. J. D. S., Moggi, L., Manfrin, M. F., Balzani, V., Hosseini, M. W. & Lehn, J. M., Jan 1989, In: Gazzetta Chimica Italiana. 119, 1, p. 65-67 3 p.

A kinetic study of photosubstitution of carbon monoxide and triphenylphosphine in complexes Mn(η^5 -CH₃C₅H₄)(CO)₃-_n(PPh₃)_n (n = 0, 1 and 2)

Teixeira, G., Avilés, T., Dias, A. R. & Pina, F., 20 Sept 1988, In: Journal of Organometallic Chemistry. 353, 1, p. 83-91 9 p.

A photocatalytic cycle for mild oxidation by dioxygen of substrates easily oxidizable by iodine

Figueiredo, P. & Pina, F., Jul 1988, In: Journal of Photochemistry and Photobiology, A: Chemistry. 44, 1, p. 57-61 5 p.

Prizes

Ferreira da Silva Prize Portuguese Chemical Society

Pina, Fernando Jorge da Silva (Recipient), 2010

Prémio Estímulo à Excelência, Fundação para a Ciência e Tecnologia

Pina, Fernando Jorge da Silva (Recipient), 2004

Prémio Gulbenkian de Ciência " Ciências Aplicadas e Tecnologias" 1998

Pina, Fernando Jorge da Silva (Recipient), 1988

Awards

SunStorage: SunStorage - Recolha e armazenamento de energia solar

Pina, F. J. D. S.

Fundação para a Ciência e a Tecnologia: €649,887.40

1/10/16 → 30/09/19

Projects

A cor da iluminura medieval portuguesa no contexto Europeu: partilha e singularidade -*- The identity of Portuguese medieval manuscript illumination in the European context

Miranda, M. A. C., Pina, F. J. D. S. & Seixas de Melo, M. J.

Fundação para a Ciência e a Tecnologia

29/06/07 → 30/03/10

Anthocyanine Blues: A Green Approach towards Food Colourants and New Pigments BAsed on Anthocyanins and Synthetic Flavylum Salts

Lima, J. C. D. S. S. E. P. D., Parola, J., Pina, F. J. D. S. & Seixas de Melo, M. J.

Fundação para a Ciência e a Tecnologia

31/08/04 → 30/08/06

Células Solares fotosensibilizadas baseadas em derivados de flavílio e líquidos iónicos

Pina, F. J. D. S.

Fundação para a Ciência e a Tecnologia

1/06/16 → 31/05/19

De matérias primas baratas para novos materiais vítreos luminescentes

Laia, C. A. T., Gago, S. M. N., Pina, F. J. D. S., Vilarigues, M., Ruivo, A. F. C. & Dabas, P.
Fundação para a Ciência e a Tecnologia
1/05/16 → 30/04/19

Desenvolvimento e Aplicação de Líquidos Iónicos Electrocrómicos e Magnéticos Development and Application of Electrochromic and Magnetic Ionic Liquids

Branco, L. A. A. F. C., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/12/11 → 30/12/14

Estudo e Caracterização de Materiais Cromogénicos *- CHROMOGENICS: Study and Characterization of Chromogenic Materials

Laia, C. A. T., Lima, J. C. D. S. S. E. P. D., Lodeiro-Espiño, C., Parola, J., Pina, F. J. D. S. & Seixas de Melo, M. J.
Fundação para a Ciência e a Tecnologia
31/10/08 → 29/04/11

POCI/QUI/57735/2004 * Fotocromismo de compostos flavílio em sistemas bifásicos água /líquidos iónicos

Lima, J. C. D. S. S. E. P. D., Lodeiro-Espiño, C., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
30/06/05 → 29/06/08

Project ADI, Program IDEIA, Contract N. 70/2008/3.1B/00348/0076 "YInvisible Paper" B

Lima, J. C. D. S. S. E. P. D., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/10/07 → 29/09/08

Projecto Mobilizador 13857, Projectos em Co-Promoção, "Invisible Network" B

Lima, J. C. D. S. S. E. P. D., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/05/11 → 30/05/14

Project: PTDC/CTM-NAN/120658/2010 Title: Desenvolvimento e Aplicação de Líquidos Iónicos Electrocrómicos e Magnéticos

Laia, C. A. T., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/12/11 → 30/12/14

Project QREN 2010/13745, Projectos em Co-Promoção "Ymagazines

Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/05/10 → 30/05/12

SunStorage: Recolha e armazenamento de energia solar

Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
1/10/16 → 30/09/19

SACS: Self-Assembly in Confined Space

Lima, J. C. D. S. S. E. P. D., Parola, J. & Pina, F. J. D. S.
European Commission
1/11/12 → 31/10/16

Sensores químicos baseados em receptores poliamínicos ligados a unidades fluorescentes POCTI/QUI/47357/2002

Lima, J. C. D. S. S. E. P. D., Lodeiro-Espiño, C., Parola, J. & Pina, F. J. D. S.
Fundação para a Ciência e a Tecnologia
31/05/03 → 29/11/06

VINEWINE RESIDUES: VINEWINE RESIDUES: Fontes ilimitadas de compostos polifenólicos para aplicação em alimentos funcionais

Pina, F. J. D. S.

Fundação para a Ciência e a Tecnologia

1/06/16 → 31/05/19

YInvisible Pré-Industrialização: Instalações piloto para a tecnologia YInvisible

Laia, C. A. T., Parola, J. & Pina, F. J. D. S.

Fundação para a Ciência e a Tecnologia

31/07/08 → 30/01/10