

LIGHT, FROM THE EARTH TO THE STARS

A Multidisciplinary Conference organized by *Ciência Viva* and the *Academia Europaea*, as a contribution to United Nations commemoration of the International Year of Light, 2015

Pavilhão do Conhecimento, Lisbon, July 2-3, 2015

Coordinated by *Rosalía Vargas*, *Ciência Viva*, and *Ricard Guerrero*, *BKH-AE*



INTERNATIONAL YEAR OF LIGHT
CIÊNCIA VIVA & *Academia Europaea*
LISBON, JULY 2-3, 2015



ACADEMIA EUROPAEA
BARCELONA KNOWLEDGE HUB



AGÊNCIA NACIONAL
PARA A CULTURA
CIENTÍFICA E TECNOLÓGICA



INTERNATIONAL
YEAR OF LIGHT
2015

July 2, 2015 (Thursday)

09:30 Registration

10:00 Opening: **THE INTERNATIONAL YEAR OF LIGHT AND LIGHT-BASED TECHNOLOGIES 2015**

Carlos Fiolhais, President of Portuguese Committee for IYL 2015

Denis Weaire, Fellow of the Royal Society, Vice-President of the Academia Europaea

Ana Martinho, Presidente da Comissão Nacional da UNESCO

Fernando Medina, Mayor of Lisbon

Federico Mayor, President of the Culture of Peace Foundation (video)

10:30 **Hommage to José Mariano Gago (1948 - 2015)**

Rosalía Vargas, *Ciência Viva*

11:00 Break

11:30 Inaugural Lecture: **PHOTON, THE PARTICLE OF LIFE, AND HER COUSINS**

Álvaro de Rújula, CERN, IFT/UAM, AE | Introduced by **Gaspar Barreira**, LIP

COSMIC LIGHT

12:30 Panel: **THE NIGHT SKY AND HIPPARCOS PROJECT** | Moderated by **Ana Noronha**, *Ciência Viva*

Unique to Europe, it was the very first space mission for measuring the positions, distances, motions, brightness and colours of stars. ESA's Hipparcos satellite pinpointed more than 100 000 stars, 200 times more accurately than ever before. The primary product from this pioneering and successful mission was a set of stellar catalogues, The Hipparcos and Tycho Catalogues, published by ESA in 1997.

Pedro Russo, coordinator of the IYA2009, University of Leiden | *The Next Light Wave: why too much light is an issue for astronomy*

André Moitinho, University of Lisbon | *3D visualization of stars and galaxies from Hipparcos to Gaia*

13:30 Break for lunch

LIGHT AND TECHNOLOGY

15:00 Panel: **HARNESSING THE POWER OF LIGHT** | Moderated by **Carlos Fiolhais**, University of Coimbra

Leds, Oleds, cheaper solar cells, will change the way we illuminate our homes and life in developing countries.

António Sá da Costa, APREN – Associação Portuguesa das Energias Renováveis | *Renewable energies: solar and wind energies*

Adélio Mendes, University of Porto | *Direct conversion of sunlight into usefull energy: a whole new world*

Guilherme Carrilho da Graça, University of Lisbon | *Sustainable architecture*

16:30 Panel: **FROM HEALTH TO SATELLITES, FROM BRIDGES TO TELECOMMUNICATIONS, OPTOELECTRONICS IS THERE FOR YOU**

Moderated by **Carlos Salema**, Instituto de Telecomunicações

Optoelectronics is widely used in applications, from health to building, from telecommunications to space industry

Miguel Castelo-Branco, Instituto de Ciências Nucleares Aplicadas à Saúde, Coimbra | *Health Sciences*

Paulo André, Instituto de Telecomunicações | *Optical communications*

Luís Ferreira, HBM FiberSensing, S.A. | *Fiber optic sensors for the real world*

Ricardo Mendes, Tekever | *Technology for high precision flight of satellites in the ESA Proba-3 project*

18:00 End of the sessions

19:30 Reception at Lisbon City Hall

July 3, 2015 (Friday)

LIGHT AND LIFE

- 10:00 Key-note Lecture: **THE FAINT SUN AND THE BRIGHT MOON: EARLY DEVELOPMENT OF LIFE ON EARTH**
Ricard Guerrero, Barcelona Knowledge Hub-Academia Europaea | Introduced by **Rosalia Vargas**, Ciência Viva
- 11:00 Break
- 11:30 Panel: **LIGHT AND SYMBIOSIS: LIFE AFTER THE PHOTOSYNTHESIS** | Moderated by **Ana Noronha**, Ciência Viva
Cyanobacteria evolved into harnessing light to generate their own energy and later, by several endosymbiotic processes, the chloroplast emerged. Life on Earth would never be the same again: a "toxic" gas emerged and invaded the atmosphere, and almost annihilated the whole incipient biosphere. This gas was oxygen, without which we all would not be here.
José Feijó, University of Maryland, USA
José Matos, Portuguese Committee for IYL 2015, Portuguese Association of Biologists and INIAV | *Feeding the Biosphere*
Ricard Guerrero, Barcelona Knowledge Hub-Academia Europaea
- 13:00 Break for lunch
- 14:30 Key-note lecture: **LIGHT IN ANIMAL COMMUNICATION AND BIOLUMINESCENCE**
Anna Omedes, Natural Sciences Museum of Barcelona | Introduced by **Rosalia Vargas**, Ciência Viva
- 15:15 **LIFE FROM LIGHT, LIGHT FOR LIFE. IN REMEMBRANCE OF LYNN MARGULIS (1938-2011)**
Exhibition of the documentary film specially made for this occasion on behalf of the Academia Europaea.
Director: **Rubén Duro**
- 15:45 Debate: **HOW TO TRANSMIT SCIENCE TO SOCIETY** | Moderated by **Rosalia Vargas**, Ciência Viva
Anna Omedes, Natural Sciences Museum of Barcelona
Rubén Duro, Centre for Microbiological Research, Barcelona
Carmen Chica, Centre for Microbiological Research, Barcelona

IN THE LIGHT OF HISTORY

- 16:30 Key-note: **THE BIRTH OF OPTICS: IBN AL-HAZEN, ONE THOUSAND YEARS AFTER**
Mònica Rius, University of Barcelona | Introduced by **Ricard Guerrero**, Barcelona Knowledge Hub-Academia Europaea
- 17:30 Break

LIGHT AND ART

- 18:00 Debate: **LIGHT AND ART** | Moderated by **Carlos Catalão Alves**, Ciência Viva
How light inspires art and how some forms of art are made of light.
João Paulo André, Chemistry Department, University of Minho
Clara Azevedo, Photographer
João Tiago Aguiar, Architect
João Botelho, Film Director
Pedro Cabrita Reis, Plastic artist
- 19:30 Light Show and Cocktail

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