Arnold MIGUS

Since July 2010 : Cour des Comptes (French Supreme Court of Audit)
Former General Director of CNRS

Expertise

Ultrafast and ultra-intense lasers and applications: optics, physics, inertial fusion for energy, astronomy, chemistry and biology. Innovations and technology transfer to industry. Science and society.

Education

1972: Graduation from École polytechnique, Paris (Promotion 1969)
1972: Master (DEA) of Mathematics (University Paris 6)
1977: Ph-D in Physics (mechanics and astronomy) from University Paris 6

Career in science and management

1973 – 1977	: Scientist at the Centre National d'Etudes Spatiales (Research Group in Spatial Geodesy, CNES / Ecole Polytechnique)
1978 – 1979	: Visiting scientist: AT&T Bell Telephone Labs (Holmdel, NJ, USA)
1979 – 1985	: Scientist at École Polytechnique (Applied Optics Lab, LOA)
1985 – 1994	: CNRS Research Director (LOA)
1990 (summer)	: Visiting scientist at Lawrence Berkeley Laboratory (Ca, USA)
1994 – 1995	: Visiting scientist at Department EECS, University of Michigan at Ann Arbor, (USA)
1996 – 2003	: Director of Laboratoire pour l'Utilisation des Lasers Intenses (LULI, CNRS / CEA / Ecole Polytechnique) [1]
2000 – 2001	: Chair of Engineering Council of CNRS
2003 –2005	: Founder and director general of the Institute of Lasers and Plasmas [2] (CNRS – CEA – University Bordeaux 1)
2003 –2005	: General Director (CEO) of the Institute of Optics[3]
2006 –2010	: General Director (CEO) of CNRS [4]
2008 – 2010	: Vice-Président of both the European Heads of Research Councils (EUROHORCS) and the European Science Foundation (ESF)

[1] ***LULI*** is a French and European Large Scale facility (supporter by EU since FP5, belonging to 7th FP Laserlab Europe, localised at Ecole Polytechnique, Palaiseau) based on high energy and high power pulsed lasers for the study of laser-matter interaction physics (http://www.luli.polytechnique.fr)

[2] ***The Laser and Plasma Institute (ILP***) is a National Entity set up in March 2003 localised in Bordzux, nearby the MegaJoule Laser, the mission of which is to promote research in the field of dense and hot plasmas and intense lasers (http://www.ilp.u-bordeaux1.fr) and interact with industry.

[3] ***The Institut d'Optique*** in Palaiseau and Orsay (http://www.institutoptique.fr) is divided into three component organizations, each of which has a specific objective:
- The École Supérieure d'Optique, which provides top-level educational opportunities in optical technologies and engineering sciences,
- The Charles Fabry Laboratory, which is one of the most renowned optics research institutions internationally,
- IOTech, which was founded in order to develop technology transfers to industry;

[4] ***The French National Center for Scientific Research (CNRS***) is a publicly-funded research performing organization that defines its mission as producing knowledge and making it available to society. CNRS is active in all major scientific fields (natural science, life science, humanities and social sciences). CNRS has 26,000 permanent employees (among which 11,600 researchers and 14,400 engineers and technical and administrative staff) and about 7000 non permanent workers. Its total budget amounts to 3 billion euros. The 1,260 CNRS service and research units (laboratories) are spread throughout France and abroad, mostly in joint laboratories with universities. Annual budget : 3 billions € (4 Billions $)

Presently:

2010 to now	: Magistrate at the Cour des Comptes (French Supreme Court of Audit)

Publications / patents:

- Above 130 publications in international journals, fifty published proceedings, one edited book, two patents (6400 citations, H index = 46).
- Founder and Chair of international meetings (Ultrafast Phenomena, Quantum Electronics (EQEC), Inertial Fusion Sciences and Applications IFSA), etc.
- Associated with two winning prizes for high-tech spin-off: Laselec in 2001, Phasics in 2003.

Society membership / Editor / Distinctions:

1995	: Elected "Fellow of the Optical Society of America"
2003-2006	: Topical Editor of Optics Letters, Optical Society of America
2006	: Chevalier dans l'Ordre de la Légion d'Honneur
2007	: Elected "Foreign Associate of the US National Academy of Engineering" (www.nas.edu)
2011	: Elected member of Academia Europaea

Arnold Migus

Biography

Arnold Migus is born in Paris on 1st October 1948. He is a physicist and was during most ot its career a research director at CNRS. He is well known for his pioneering work in ultrafast lasers and their applications to ultrafast phenomena in physics, chemistry and biology. He is also an expert on large scale facility and technology transfer. He has more recently managed large institutions of higher education and research. He has finished in January 2010 his term of general director (CEO) of CNRS after achieving a four year mandate. He is presently at the Cour des Comptes (Supreme Court of Audit or Court of Account[i] whose new main mission is the evaluation of public policy) and also advises the President of the Ecole Polytechnique[ii] (in particular for its policy in optics and laser projects ILE and European ELI facilities).

After graduating from Ecole Polytechnique in Paris, Arnold Migus joined in 1974 the Centre National d'Etudes Spatiales (CNES) and then AT&T Bell Labs (Holmdel, NJ, USA) in 1978. Back in France, he joined the Applied Optics Laboratory (LOA) at Ecole Polytechnique in Palaiseau and becomes research director at CNRS in 1985. He developed there pioneering works on ultrafast lasers and spectroscopy and is one of the founder of an INSERM (Medical research) unit on Molecular and Cellular Photobiology where he stayed until the LOA became a joint physics laboratory with CNRS. Arnold Migus is internationally well-known for the work he performed in LOA leading for example to the discovery of the presolvated electron in water, the fist steps in bacterial photosynthesis, the dynamic of heme conformation hemoproteins or the optical Stark effect in semiconductors. He chaired with Jean-Louis Martin, Gérard Mourou and Ahmed Zewail the1992 Ultrafast Phenomena conference.

Arnold Migus taught laser physics and applications from 1982 until 1993 in various higher education institutions: Université Paris 11 at Orsay, Ecole Nationale des Telecommunications, Ecole Nationale des Techniques Avancées in Paris. He spent a sabbatical in Berkeley (LBNL) in 1990 and at the University of Michigan in Ann Arbor (Center of Ultrafast Optical Science) in the period 1994 -1995. In 1996 he became director of a large scale European laser facility, the LULI at Ecole Polytechnique and upgraded it to the level of a quasi petawatt laser.

In 2003 he joined the Institute of Optics as its general director and moved it from Orsay to a new infrastructure in the Polytechnique campus in Palaiseau, creating a cluster with also the Thales laboratories and other companies (Horiba Jobin-Yvon for instance).

In 2003, he created in parallel the ILP (Institut Laser Plasma) in Bordeaux and became its first general director until 2006. He also managed in parallel a research team in CEA, first in the Paris area (in Limeil with the Phebus and P102 laser facilities) and later in the Bordeaux area, pioneering chirped pulse amplification (CPA) in large power laser (LIL and LMJ) and applications to inertial confinement fusion for energy. In addition to CPA developments, he also discovered with his team at CEA in 1993 the first random laser.

From 1994 until 2005 he was a member of the French National Committee on Research (assessment of research in optics, atomic and molecular physics section) where he also chaired the CNRS Engineering Sciences Council.

He held the position of Topical Editor of Optics Letters (Journal of the Optical Society of America) until 2006. He has published himself above 130 articles in internationally refereed journals (ISI h index = 44, 6200 citations).

Arnold Migus has been a consultant in the laser industry (Quantel) from 1988 to 1993 and a scientific adviser at CEA from 1988 until 2006. He has been a member of the French Defense Science Board since 1998.

He was at the origin of two winning prizes for high-tech spin-off companies : Laselec in 2001 (solid state diode pumped lasers), Phasics in 2003 (solutions in high resolution wavefront analysis and sensing for laser metrology and adaptive optics) and helped the success of another start-up, FastLite (ultrafast pulse shaping and pulse measurement systems). He is one of the founders of the "Optics Valley" cluster and a board member of various other clusters (Pôles de compétitivité): System@tic Ile-de-France, Aquitaine Laser et Photonique et Applications, etc.). Many of its former PhD. Students are now in charge of optical start-up[iii].

While general director of CNRS, he was elected vice-president of both the European Heads of Research Councils (EUROHORCS) and the European Science Foundation (ESF) until 2010.

Presently, Arnold Migus is involved in the assessment of public policy and how to put in practice evidence science based political decisions).

He was elected "Fellow of the Optical Society of America" in 1995, "Foreign Associate of the National Academy of Engineering of the United States of America" in 2007 and member of Academia Europaea in 2011.

Sampling of the publications of Arnold Migus (per domain)

6420 citations, h-index (ISI base) : 46

Space - Astronomy – Adaptive optics

[8] A. Migus, "Lunar analytical libration tables", Moon and Planets, vol. 23, 1980, 391-427.
[146] R. Foy, Y. Boucher, B. Fleury, G. Grynberg, P.R. McCullough, A. Migus and M.Tallon, "Atlas status report and tilt sensing using multicolor laser reference star", ESO Reports ed. M.h. Ulrich (Garching, RFA), (1993)
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Lasers : general ; ultra-fast ; ultra-intense ; lasers for fusion

[10] E.P. Ippen, C.V. Shank, J.M. Wiesenfield, A. Migus, "Subpicosecond pulse techniques", Phil. Trans. Roy. Soc, 1980, 225-232., vol. A298.
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[128] J.P. Likformann, G. Grillon, M. Joffre, C. Le Blanc, A. Migus and A. Antonetti, "Generation of 27fs pulses of 70kW peak power at 80MHz repetition rate using a cw self-pulsing Ti:sapphire laser", Applied Physics Letters, vol.58, (1991), pp.2061-2063.
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Optronics - Semiconductors (fundamental properties / applications)

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Materials and nonlinear optics

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Chemical physic and biology

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