

**Résumé**

Karine Lagrené is a materials science engineer from the [Ecole Polytechnique de l'Université de Nantes](#). During her studies she acquired physics and chemistry skills related to materials. During her training, she joined, as an exchange student, the [Materials Science and Engineering department at the Carnegie Mellon University](#) (Pittsburgh, Pennsylvania) in order to be specialized in thin films and nanomaterials.

In 2008, she obtained a PhD in Physical Chemistry from the [Université Paris Sud Orsay](#). Her PhD works, dedicated to polymers under confinement was performed at the [Laboratoire Léon Brillouin](#) (UMR12 CEA-CNRS) and included the synthesis and the experimental characterization of the data analysis and modelisation. She pursued as a Research Engineer at the [Laboratoire Francis Perrin](#) (URA 2453 CEA-CNRS) on the [project NaWaTUB](#). In 2010, she joined Coventya as a Research and Development Engineer for the Aluminium products.

In 2012, she choose to put on hold her engineer research career and add to her skills an orthoptist certification. During her three years training, she worked with Dr Laplace and Dr Le Du (Service Pr Nordmann, [CHNO XV XX](#)) on the gestion of the corneal astigmatism during cataract surgery. This human, technical and clinical study convinced her to use her research skills for vision problematics.

In Novembre 2015, she joined the [Silversight Team](#) as a postdoctant to perform the functional vision screening of the Silversight cohort.

**Professional and training experience****11/2015****Post Doctoral Reasearcher**

Vision Institute, Pierre and Marie Curie University (UPMC), Paris, France

Aging in vision and action lab

Group Leader : Dr Angelo Arleo

**09/2014 - 06/2015 Third year orthoptist internship**

Service Pr. Nordmann, CHNO XV-XX, Paris, France

Supervisor : Kostas Aline

Clinical study : *correction of low corneal astigmatism during cataract surgery : Toric IOL versus opposite clear corneal incisions.*

Study codirected by Dr O. Laplace and Dr B. Le Dû.

**09/2013 - 06/2014 Second year orthoptist intership**

Service Pr. Le Hoang, Pitié Salpêtrière Hospital Paris, France

**09/2012 - 06/2013 First year orthoptist intership**

Service du Pr. Nordmann, CHNO XV-XX, Paris, France

Supervisors : Marie Michel-Deschamps, Anthony Gatineau

**07/2010-06/2012 R&D Research Engineer, Coventya, Clichy, France**R&D Project : *Aluminium products from the surface preparation to anti corrosion Cr<sup>6+</sup> free coating.***05/2009-07/2010 Research Engineer, CEA, Laboratoire Francis Perrin, Saclay, France**NaWaTUB project : *upscaling process for vertically aligned carbon nanotubes carpets*

Group Leader : Dr Pascal Boulanger

**10/2005 - 10/2008 Research Engineer, CEA, Laboratoire Léon Brillouin, Saclay, France**Thesis title : *Polymer dynamics under quasi-uniaxial confinement.*

Supervisors : Dr Mohamed Daoud and Dr Jean-Marc Zanotti

**2005 - 2007 Teaching, IUT Physics Paris XII university, Créteil, France**

Practical classes for 1st year Physics student :Heat transfert phenomena (98h) and Thermodynamic (74h).

**02/2005 - 07/2005 Research internship**, CEA, Laboratoire Léon Brillouin, Saclay, France

Research project : *Study and characterization of nanoporous alumina for polymer confinement.*

Supervisor : Dr Jean-Marc Zanotti

**09/2004-12/2004 Research internship**, Carnegie Mellon University, Pittsburgh, USA

Research project : *Silicon-Carbon based Nanocomposite Anodes for Li-ion Batteries.*

Supervisor : Pr Prashant N. Kumta

**04/2004-08/2004 Research internship**, Long Island University, New York, USA

Research Project : *Solid electrolytes applied for gas sensor : synthesis and characterization.*

Supervisor : Pr Azzedine Bensalem

## Academic qualifications

**2012 - 2015 Orthoptist certification**, Pierre and Marie Curie University, Paris, France

**2005 - 2008 PhD in Physical chemistry** with Highest honors, University Paris XII, Orsay.

**2004** Université de Carnegie Mellon, Pittsburgh, USA

**Exchange student** in the Materials Sciences and Engineering Department

Major : thin films

**2001 - 2005 Engineer (Master degree)**, Polytech'Nantes, Nantes, France

Major: Materials Science and Engineering

## Competencies and Expertises

**Scientific Physical chemistry** : synthesis, characterization and modelisation

**Materials Science** : aluminium, polymers, nanomaterials, thin films

**Orthoptic Vision evaluation, treatment** of oculomotor disorders and low vision **rehabilitation**

**Software Mathematical simulation and calculation** : Matlab, Simulink, IDL

**Data treatment** : Kaleidagraph, Origin

**Languages French** : mother tongue

**English** : fluent

**Spanish** : basic notion

## Award

Thesis Prize : French Neutronic Society in 2009

## Patent

WO2012013603 - FR2963481 : Inorganic electrolyte membrane for electrochemical devices, and electrochemical devices including same. J.-M. Zanotti, K. Lagrené

## Publications

J.-M. Zanotti, K. Lagrené, N. Malikova, P. Judeinstein, et al., Nanometric confinement : toward new physical properties and technological developments, Eur. Phys. J. Special Topics, 213, 129-148 (2012)

K. Lagrené, J.-M. Zanotti, M. Daoud, B. Farago, P. Judeinstein, Dynamical behaviour of a single polymer chain under nanometric confinement, Eur. Phys. J. Special Topics, 189, 231-237 (2010)

K. Lagrené, J.-M. Zanotti, M. Daoud, B. Farago, P. Judeinstein, Large scale dynamics of a single polymer chain under severe confinement, Phys. Rev. E 81, 060801(R) (2010)

K. Lagrené, J.-M. Zanotti, Evidence of bayerite clusters within the AAO amorphous bulk alumina. Consequence for the AAO SANS matching properties, Mater. Res. Soc. Symp. Proc. Vol. 1074 (2008)

K. Lagrené, J.-M. Zanotti, Anodic Aluminium Oxide : concurrent SEM and SANS characterisation. Influence of AAO confinement on PEO mean-square displacement, Eur. Phys. J. Special Topics 141, 261-265 (2007)

K. Lagrené, J.-M. Zanotti, Anodised Aluminium Oxide as confining medium for polymers. Characterization and influence of confinement on PEO dynamics, proceeding MATERIAUX 2006 conference (2006)

### Invited talk

**K.Lagrené**, J.-M. Zanotti (2010) Polymer dynamics under quasi-uniaxial confinement. The case of PEO in porous alumina. Technische Universität Darmstadt, Germany

**K. Lagrené**, J.-M. Zanotti (2009) Dynamique de polymères électrolytes sous confinement quasi-uniaxial : le cas du PEO. ENSMA, LMPM, Futuroscope, France

**K. Lagrené**, J.-M ; zanotti (2008) Dynamique de polymères électrolytes sous confinement quasi-uniaxial : le cas du PEO. INSTITUT DE PHYSIQUE DE RENNES (IPR), Université de Rennes 1, France

### Conference talk

**O. Laplace**, B. Le Du, K. Lagrené (2015) Correction des faibles astigmatismes au cours de la chirurgie de la cataracte : implant torique versus incisions relaxantes périphériques, SAFIR 2015, Paris, France

**J.-M. Zanotti**, K. Lagrené, P. Judenstein et al. (2012) Large scale dynamics of a single polymer chain under confinement, 10th International Conference on Quasielastic Neutron Scattering, Nikko Sogo Kaikan, Japan

**J.-M. Zanotti**, K. Lagrené, P. Judenstein et al. (2012) Large scale dynamics of a single polymer chain under confinement, 13<sup>èmes</sup> Journées de la Matière Condensée, Montpellier, France

**K. Lagrené**, J.-M. Zanotti (2010) Polymer dynamics under quasi-uniaxial confinement. The case of PEO in porous alumina CONFIT2010 4<sup>ème</sup> international workshop on dynamics under confinement, Grenoble, France

**J.-M. Zanotti**, K. Lagrené, M. Daoud et al. (2010) 3D to 1D nanometric confinement of molecular systems. Toward new physical properties and potential technological developments, 9<sup>ème</sup> journées de la neutronique, Batz sur Mer, France

K. Lagrené, **J.-M. Zanotti**, M. Daoud et al. (2009) Polymer dynamics under quasi-uniaxial confinement. The case of PEO in porous alumina. Materials Research Society, Fall Meeting , Boston, USA

K. Lagrené, **J.-M. Zanotti**, M. Daoud et al. (2009) Polymer dynamics under quasi-uniaxial confinement. The case of PEO in porous alumina. JCNS Workshop "Trends and Perspectives in neutron Scattering on Soft Matter", Tützing, Germany

**K. Lagrené**, J.-M. Zanotti (2008) Anodized aluminium Oxide as macroscopically ordered system. A concurrent SEM SANS and SAXS analysis. MRS Spring meeting 2008, San Francisco USA

**K. Lagrené**, J.-M. Zanotti (2008) Effet du confinement quasi-uniaxial sur la dynamique d'un polymère : le cas du PEO. 6<sup>ème</sup> RENCONTRES LLB-SOLEIL, Étude de la Matière Molle, S<sup>t</sup> Aubin, France

**K. Lagrené**, J.-M. Zanotti (2007) Anodized aluminium Oxide as macroscopically ordered system. A concurrent SEM SANS and SAXS analysis. THE ELECTROCHEMICAL SOCIETY 211<sup>th</sup> ECS meeting, Chicago USA

**K. Lagrené**, J.-M. Zanotti (2006) Alumine poreuse : matériau de confinement. Effets du confinement sur la dynamique du PEO. MATERIAUX 2006, Dijon, France

### Conference poster

**N. Dinter**, C. Rivron, K. Lagrené et al. (2010) Influence of geometrical characteristics of aligned multi-walled carbon nanotubes on specific surface area and pore size distribution. CECAM-HQ-EPFL, Lausanne, Switzerland

**K. Lagrené**, J.-M. Zanotti (2007) PEO Melt Dynamics in bulk and confined in nanometric cylindrical channels. 4<sup>th</sup> EUROPEAN CONFERENCE ON NEUTRON SCATTERING ECNS2007, Lund, Sweden

**K. Lagrené**, J.-M. Zanotti (2009) PEO melt dynamics in bulk and confined in nanometric cylindrical channels. JOURNÉES DE LA MATIERE CONDENSÉE JMC10, Toulouse, France

**K. Lagrené**, j.-M. Zanotti (2006) Polymer dynamics under confinement in porous alumina membrane. JOURNÉES DE LA NEUTRONIQUE JDN14, Murol, France

**K. Lagrené**, j.-M. Zanotti (2006) Polymer dynamics under confinement in porous alumina membrane. CONFIT2006 3<sup>ème</sup> international workshop on dynamics under confinement, Grenoble, France