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Date of Birth :13/01/1987

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PhD in Biophysics

PhD student from 01/09/2012in the LPT & IPBS labs, CNRS (Toulouse-France), defense expected at the end of October

Keywords : Single molecule approaches, Kinetic Monte-Carlo simulation, statistical physics, DNA dynamics, soft matter

Nationality: French
Driver's license, B

Skills

Modeling

Approach : Dynamic Kinetic Monte-Carlo simulation

Data analyses procedure

Developing an computing procedure to check the physical coherence (symmetry factor, correlation function) of gigaoctet of raws data and to applied first step of analyses

Informatics

Tools : Mathematica, Matlab, Labview, Scribus (PAO), Pymol, gnuplot, office tools
Languages : Fortran, C, R, LaTeX, Beamer, bash
Office tools: GIMP, Inkscape, Microsoft office and OpenOffice (type Word, Exel, Powerpoint)
Systems : Linux (Ubuntu), Windows

Microscopy

Techniques : STM, MEB, fluorescence and dark field microscopy
Analysis : ImageJ

Characterization technique

DLS, Zetasizer, UV spectroscopy, quantification PCR

Surface treatment process

Chemical treatment : epoxydation, thiolisation, piranha
Physical treatment : Plasma cleaner, UV ozone
Method : spin coating, deposit convective self-assembly

Languages

English : TOEIC Score 775
German : Conversational basics

Training and Diplomas

2012-Now **PhD in Physics (defense planned the October 16th 2015)** — **University of Toulouse III (France)**
Specialty : Physics — **LPT and IPBS, CNRS, Toulouse**
Single molecule study of DNA molecules conformations with local defects or under a large set of physicochemical conditions - Advisor : **Destainville N. (LPT) and Tardin C. (IPBS)**

- Measuring the impact of intrinsic bending, local denaturation or variation of ion concentration in solution on the DNA conformations with high-throughput Tethered Particle Motion (HT-TPM)
- Performing a kinetic Monte-Carlo Simulations based on a mesoscopic statistical model of DNA
- Developping a computational procedure for the analysis of the large data sets from HT-TPM

2011-2012 **Master 2Research, Specialty :** Nanosciences, Nanomesures — **University of Toulouse III (France)**
Master's training period in nanotechnologies (6 months) — **LAAS-CNRS, Toulouse (France)**
Formation of nano-energetic material made of Al/CuO alloy driven by DNA auto-assembly and chip integration – Advisor : **Bancaud A. and Rossi C.**

- Constructing heterogeneous advanced material structured on 1D, 2D or 3D by using the complementarity of the double strand DNA, and optimize its stability and its energetic response

2010-2011 **Master 1, Specialty :** Fundamental Physics — **University of Toulouse III (France)**
Master's training period in microscopy (2 months) — **CEMES-CNRS, Toulouse (France)**
Studies of the 2-(3-perylene) ethanoic acid molecular by Scanning Tunneling Microscopy (STM) at Low Temperature and Ultra High Vacuum – Advisor : **Coratger R.**

- Measure the value of the single negative charge appearing during the process

2009-2010 **Licence 3, Specialty :** Physics and Applications — **University of Toulouse III (France)**
Training period at the Braley company — **Braley Company, Bozouls (France)**
Realization of a solar furnace coupled with a Stirling engine

- Realizing the solar furnace and animating a stand on the energies at the open day of the company

Scientific Publications

2015 **Brunet, A.**, Tardin, C., Salomé, L., Rousseau, P., Destainville, N., Manghi, M., **Dependence of DNA persistence length on ionic strength of solutions with monovalent and divalent salts: a joint theory-experiment study, Macromolecule**, 2015, 48 (11), pp 3641–3652, DOI : 10.1021/acs.macromol.5b00735

2015 **Brunet, A.**, Chevalier, S., Destainville, N., Manghi, M., Rousseau, P., Salhi, M., Salomé, L., Tardin, C., **Probing a label-free local bend in DNA by single molecule tethered particle motion, Nucleic acids research,** 2015, DOI : 10.1093/nar/gkv201

In preparation **Brunet, A.**, S., Destainville, N., Manghi, M., Rousseau, P. , Salomé, L., Tardin, C., **Dependence of DNA apparent length and persistence length on temperature of solutions, a joint theory-experiment study**

Congresses and Thematic Schools

Oral Communications

November 2014 — 3rd meeting of FRBT – **Toulouse (France)**,
May 2013 — 3rd edition of the "Les Houches School" in computational physics: DNA, from molecules to evolution – **Les Houches (France)**

Thematic Schools

August 2014 — Summer school : SOFT-FIRE-2014 – **Cargèse (France)**, (2 weeks)
May 2013 — 3rd edition of the "Les Houches School" in computational physics: DNA, from molecules to evolution – **Les Houches (France)**, (2 weeks)

Poster Communications

8-14 Aout 2015 — Gordon Research Conference (GRC) : Soft Condensed Matter Physics - **New London (USA)**
August 2014 — Summer school : SOFT-FIRE-2014 – **Cargèse (France)**
May 2013 — GDR Cell Tiss 2013 - **Lyon (France)**
May 2013 — 3rd edition of the "Les Houches School" in computational physics: DNA, from molecules to evolution – **Les Houches (France)**

Seminars

January 2014 — Seminar IRSAMC – **Toulouse (France)**,
August — Gordon Research Seminar (GRS) : Soft Condensed Matter Physics - **New London (USA)**

Student Supervision

Master's training period : Juliette Wilhem **(2 months)**

Summer 2014 **Probing the experimental effect of the ionic strength on the DNA conformation release by TPM, at the single molecule level**

References

Pr. Destainville Nicolas
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Other Activities and Interests

Other professional experience

2012 — Technical staff at the Symposium J of l'E-MRS 2012 Spring Meeting - Strasbourg (France)

Associative activities :

Since 2009 — Co-founder and editor of the inter-university newspaper *: Le Lapin Blanc* – University of Toulouse I, II and III (France)
2007-2008 — University of Toulouse III site organizer for the AMIDONS association – Inter- university Association for donation of blood – University of Toulouse III (France)
Since 2006 — AMIDONS association volunteer - Toulouse (France)
2003 — First aid qualification - *Attestation de Formation aux Premiers Secours* - Œuvre hospitalière française de l'ordre de Malte (France)

Entertainment : Reading (Polar, Heroic fantasy, Anticipation), climbing, volleyball, badminton, cinema, theater, rugby