

ESF - Short Visit Grants - Application

In Confidence

SHORT VISIT GRANT

Reference Number : **2831**
Application submitted : **28/02/2009 01:42:12**

ESF ACTIVITY

Unit(s) : **PESC**
Activity Title : **Interdisciplinary Approaches to Functional Electronic and Biological Materials**
Activity Acronym : **INTELBIOMAT**

PROJECT

Title of the proposed research project : **Ordered phases of helical RecA+DNA complexes**
Date of visit (starting date) : **11/05/2009**
Duration : **14 day(s)**
Applicant's Name : **Dr. Tomislav Vuletic, Zagreb, Croatia**

ESTIMATED EXPENDITURE

Subsistence Allowance : **1190 €**
Travel Cost : **400 €**
Total : **1590 €**

HOST INSTITUTE(s)

Dr. Francoise Livolant, Orsay CEDEX, France

Scientific REPORT:

As stated, the aim of the visit was to finalize a publication titled “Ordered phases of helical RecA+DNA complexes” by T. Vuletic, M. Renouard & F. Livolant. During the post-doc stay of T. Vuletic in the group of F. Livolant at LPS, Orsay and subsequent visits, we made observations of multiple liquid-crystalline phases in dense preparations of RecA self-polymers and rod-like RecA+DNA nucleoprotein filaments (formed with 146 bp DNA fragments). In the publication we will present our initial polarizing light microscopy observations of nematic and cholesteric textures in solutions with estimated concentrations above 100 g/L of RecA self-polymers and hexagonal phase characteristic textures for preparations at above 200 g/L. Very characteristic for RecA selfpolymer as a helical mesogen are cholesteric germs - spherulites which appear in coexistence with isotropic phase already above 80 g/L. We also observed some nematic and cholesteric textures, in preparations with more than 100 g/L of RecA+DNA nucleoprotein filaments. Presumably hexagonally ordered, diamond shaped domains (found in preparations with average concentration above 200 g/L) were the fingerprint texture for RecA+DNA system, along with an absence of the cholesteric spherulites. We noticed that RecA self-polymers, despite their expected polydispersity showed facilitated mesophase formation compared to RecA+DNA complexes whose solutions were more viscous and apparently did not form a cholesteric phase. This occurred despite the fact that RecA+DNA filaments size is defined by its practically monodisperse DNA substrate, i.e. RecA+DNA should be a monodisperse, helical, rod-like mesogen. In the discussions we had during this stay, we also got intrigued by our other results on this biomacromolecular system, obtained with electron microscopy, light scattering, fluorescence correlation spectroscopy, as well as gel electrophoresis, which were used primarily to test the complexation process.

All this was understood as indication of competition between (RecA+DNA) filaments aggregation and mesophase formation. We find that this is relevant for the description of the environment where RecA functions and how it is stored in the cell.

The draft we have thus prepared now only needs to be transformed into a submission-ready version by T. Vuletic. Submission is planned during the summer months to either Biomacromolecules journal or to the Journal of Biophysics.

Another important element of this stay was the consultation of T. Vuletic with A. Leforestier from the F. Livolant group on the purchase of the polarizing microscope. A simple, affordable solution was found, which will nevertheless achieve the goal of observing the liquid crystalline phases of RecA+DNA in Zagreb.

T. Vuletić



Zagreb 15.06.2009.

Financial REPORT (travel costs):

Due to a rather tight schedule of the host, as well as of the guest, for travel, a car was used, to keep the planned dates 11-25.05.09 and to avoid a possible excessive cost of the last minute changes to the travel arrangements. Thus, the travel tickets may not be joined to this report.

However, I attach the Zagreb-Paris-Zagreb airline ticket price quotes from both Croatia Airlines and AirFrance web sites, as well as a formal ticket price quote for a train ticket (2nd class) issued by Croatia Express agency of Croatian Railways. These prices range from 390 to 450 EURO. Exchange rate for Croatian Kuna (HRK) is about 745 HRK for 100 EUR – thus the railway ticket of 3266,17 HRK will cost about 440 EUR.

T. Vuletić



Zagreb 15.06.2009.



review your flight details

Legend: **e** = e-ticket option, **HRK** = Kuna (Croatia), **EUR** = Euro

Zagreb to Paris

Flight 1

Sunday, May 10, 2009

Departure: 08:30 Zagreb, Croatia - Pleso

Arrival: 10:35 Paris, France - Charles De Gaulle, terminal 1

Airline: Croatia Airlines OU470 **e** **Aircraft:** Airbus Industrie A320-100/200

Fare type: [FlyOpti](#)/Economy Restricted

Paris to Zagreb

Flight 1

Saturday, May 23, 2009

Departure: 17:30 Paris, France - Charles De Gaulle, terminal 1

Arrival: 19:20 Zagreb, Croatia - Pleso

Airline: Croatia Airlines OU471 **e** **Aircraft:** Airbus Industrie A319

Fare type: [FlyOpti](#)/Economy Restricted

Legend: **e** = e-ticket option, **HRK** = Kuna (Croatia), **EUR** = Euro

price

travellers	flights	taxes		
1 adult(s) x	(1,915.00 + 879.00)	=	2,794.00 HRK	(375.53 EUR)
	sub total		2,794.00 HRK	(375.53 EUR)
	Ticket Service Charge		+112.20 HRK	(+15.08 EUR)
	total for all travellers		2,906.20 HRK	(390.61 EUR)

[purchase conditions](#)

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Votre voyage

Passager : 1 Adulte

Vols	Départ	Arrivée	Durée	Escale Appareil	Classe
Vol Aller Dimanche 10 Mai 2009					
AF2055	06:50	Zagreb, Pleso (ZAG) - Croatie	08:55	Paris, Charles de Gaulle (CDG) - France	02h05mn Vol direct, CANADAIR Voyageur Q
Vol Retour Dimanche 24 Mai 2009					
AF1254	09:40	Paris, Charles de Gaulle (CDG) - France	11:40	Zagreb, Pleso (ZAG) - Croatie	02h00mn Vol direct, CANADAIR Voyageur Q

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Détail du prix en euros

Montant total **446,89 €**

Tarif	Taxes et surcharges	Frais de service	Passager	Montant TTC	
325 €	+ 118,89 €	+ 3 €	x 1 Adulte	= 446,89 €	i frais de service
Montant total :				446,89 €	

Convertir dans une autre monnaie (montant donné à titre indicatif) = 446,89 €

i gain de miles

Conditions d'utilisation

Vol Aller	Modification autorisée avant le départ : Frais de modification de 50 EUR Modification autorisée après le départ : Frais de modification de 50 EUR
Vol Retour	Modification autorisée avant le départ : Frais de modification de 50 EUR Modification autorisée après le départ : Frais de modification de 50 EUR

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CROATIA EXPRESS
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Zagreb, Nikole Tesle 4
Telefoni: 01/ 4811-842, 01/4811-836
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IATA: 75320092

MB: 1350161
ŽIRO RAČUN: 2360000-1101211981
Devizni račun: Zagrebačka banka d.d.
IBAN: 432360000-1101211981
SWIFT: ZABA HR2X

PONUDA br. 148/09-83/MS

Zagreb, 28.04.2009

Model: 05 -

Institut za fiziku

Bijenička cesta 46
10000 Zagreb
MB: 3270424

Naziv – vrsta	količina	Cijena	Naknada bez poreza	PDV 22 %	Ukupno (naknada s porezom)
MR TOMISLAV VULETIĆ Željeznička karta 2. raz. • Zagreb Paris • Zagreb • 09. /23.05.09.	1	2.787,37	2.787,37	0,00	2.787,37
Udio HŽ-a	1	18,69	18,69	4,11	22,80
Rezervacija kola za spavanje • Zagreb Munich • Zagreb •	2	217,80	435,60	0,00	435,60
Udio HŽ-a	2	8,36	16,72	3,68	20,40
Ukupno:			3.258,38	7,79	3.266,17

Ukupno za platiti: **HRK 3.266,17**

Slovima: tritisućedvjestošezdesetšest kuna i sedamnaest lipa

Ponuda po navedenoj cijeni vrijedi za uplatu i izdavanje do 30.04.09.

Fakturirala:

Maja Sertić

Ovlaštena osoba:

Katarina Čagalj
voditeljica poslovnice

Prodaja u ime i za račun HRVATSKIH ŽELJEZNICA.

**Molimo Vas, nakon virmanske uplate,
primjerak virmana obvezno pošaljite na naš fax br. 01/4811-920.**