

# LLC Research Programme Financed by the LLC Linné Grant

## Proposal from the LLC Research Committee to the LLC Board November 2006

### Background

The Lund Laser Centre (LLC) was formed in 1995 as a joint entity between three faculties at the Lund University: the faculties of Engineering, Science and Medicine. With LLC as a base, an application to the EC within the Access to Large Scale Facilities programme was submitted. The application was successful, as were later corresponding applications, resulting in the status of the LLC as an EC Large Scale Infrastructure during all its time of existence. Yearly, 1.5 - 2 MSEK was thus available to the LLC for a Research Access programme. Thus, European groups who submitted successful applications, have been coming to Lund to perform their projects together with LLC researchers. By retaining centrally about 0.5 MSEK of the funds received, it has been possible to have a secretariat and to perform small joint LLC activities.

The Swedish government in 2005 decided to open a new research funding programme for faculty support in competition between the Swedish universities. The support would be long-term – 10 years – a new feature on the Swedish research scene. The Swedish Research Council (VR) was selected to administer the new funding process in a programme, which was named *Linnaeus (Linné) Grants*. University rectors could apply with selected research programmes up to a certain financial volume, determined by the past total research budget. For Lund University a frame of 100 MSEK was allocated. LLC entered the internal competitive process and was successful to be selected for preparing a grant application at the level of 5 MSEK/y. The application

### *Exploring and Controlling the States of Matter with Light - Multidisciplinary Laser Spectroscopy within the Lund Laser Centre*

was submitted with the following 10 LLC researchers listed as primary applicants (with CV and publication list):

*Sune Svanberg, coordinator*  
*Marcus Aldén*  
*Sveneric Johansson*  
*Jörgen Larsson*  
*Anne L'Huillier*  
*Mark Linne*  
*Tönu Pullerits*  
*Villy Sundström*  
*Katarina Svanberg*  
*Claes-Göran Wahlström*

Lund University had previously decided to support each successful project with 1 MSEK/y from central funds.

The LLC application was successful, and on June 29, 2006, 5 MSEK/y was granted for 10 years, subject to certain regulations in an evaluation programme. Thus, in total 6 MSEK/y was available to the LLC to pursue LLC-coordinated activities.

In an extraordinary LLC Board Meeting on August 23, 2006 it was decided to initiate the process of building an initial research programme by forming working groups, for which the following persons were selected as conveners:

Sveneric Johansson  
Anne L Huillier  
M. Aldén  
Villy Sundström  
S. Andersson-Engels  
Claes-Göran Wahlström

The working groups correspond to the 5 areas of research, proposed in the application for the first 2-4 years, and in addition a further area, Laser-driven particle acceleration, which was listed in the application in a frame beyond 5 MSEK/y. Since a professorship in Optical Quantum Electronics, and other aspects put forward in the application, can be established only with some delay, the sixth field might also be supported for an initial period.

At its regular LLC Board meeting, September 7, 2006, a Research Committee, put forward in the application, was appointed, consisting of 2 members external to the LLC and 5 internal members:

Prof. Ove Poulsen, Aarhus  
Prof. Joseph Nordgren, Uppsala

Marcus Aldén  
Stefan Andersson-Engels  
Sveneric Johansson  
Villy Sundström  
Sune Svanberg

Sune Svanberg, selected by Lund University as coordinator of the Linnaeus grant, was appointed chairman of the Research committee. It was later proposed that Claes-Göran Wahlström, deputy director of LLC, be adjoined to the committee.

At the suggestion of the LLC board chairman, Bengt E.Y. Svensson, a hearing with the Research committee and further stakeholders within LLC research was convened for October 23, 2006. The individual group conveners had been asked to give a 15 minute presentation and proposal, supported by a short written summary. The meeting attracted some 20 researchers. S. Svanberg gave an introduction, along the lines presented above in the present document, and Powerpoint presentation were made by the group conveners,

with possibilities for comments and discussion. Unfortunately, one of the external committee members, Joseph Nordgren, could not attend the meeting. It was decided to report to him from the meeting separately and to seek his opinions. This occurred two days later, on October 25, technically at the premises of the Strategic Research Foundation in Stockholm, where he had a 2 hour meeting with Sune Svanberg, who presented to him PPT-material from the hearing .

Below follows the integrated outcome of the hearing and its follow-up. The present report and the six written summaries, have been sent to all Research committee members for comments and amendments. Based on this procedure the following recommendations are made to the LLC Board:

### **LLC Linnaeus Research Programme July 1, 2006 – December 31, 2007**

The contents of the approved LLC Linnaeus grant application must be strongly guiding the initial research programme. In the application a tentative programme for the first 2-4 years was presented. In the application a professorship in Optical Quantum Electronics is also proposed. The committee recommends the LLC board to prepare for the announcement of this position, as described in the proposal. Guiding here should be that the successful applicant would be given an initial period of substantially better faculty funding than present professors – but that it is made clear that following this period the conditions for the new professorship would be the same as for other professors at the relevant faculty.

The committee agrees that the *main line of thinking*, as expressed in the application, is support of research, where combined efforts from different units forming the LLC are used to foster novel research, frequently of interdisciplinary nature. In this way the competitive advantage of the LLC is fully utilized. According to the application, this does not preclude support of other special projects, where strong motivation exists. It was also noted, that the well-being of the Lund High-Power Laser Facility, widely considered as a spear-head of the LLC in its status as a European Large Scale Infrastructure, must be considered to ensure a future success of the LLC in the European Infrastructure funding context.

Based on the presentations from the working groups and the supporting written material, the committee finds that all these areas are suitable for initial Linnaeus grant support. Frequently, many project suggestions are put forward, and it is recommended to refer to the groups to pursue a programme to maximize the benefits of the grant. For each area the present conveners are suggested to be responsible for the distribution of funds on projects and divisions, in consultation with Sune Svanberg, who is the overall project manager, responsible for the Linnaeus grant. The allocations given below are for a 18 month period ending December 31, 2007, and includes all overheads. In the contract it is stated by VR that the grant includes 35% overhead. The reason for limiting the first fund allocation to 18 months is to ensure that the programme can start without delay, while still allowing to control that the fund distribution model chosen works as intended. Fiscal year synchronization is also achieved. The first external evaluation of the progress of the

Linnaeus efforts will be made by VR after about 18 months. In the disposition of funds it should be noted that allocations are for salaries, not for equipment. Supported projects are expected to have a certain continuity, but changes may occur successively, as the Linnaeus project is expected to have an impact of the entire LLC research programme and to have the primary role of enhancing the LLC competitiveness through excellence and collaboration. Although individual projects pursued may vary, a certain continuity and fund predictivity on the division level is desirable (“Matrix concept”).

<b>Proposed allocations (and responsible person); 18 months</b>	<b>kSEK</b>
Astrophysical/Atomic laser spectroscopy (Sveneric Johansson)	1500
Advanced diagnostics applications in energy, environmental and medical research (laser spectroscopy and multi-spectral imaging) (Marcus Aldén)	1200
Real-time structural dynamics (Villy Sundström)	1200
Chemistry, physics and applications of sensitizers and beacons (Stefan Andersson-Engels)	1200
<i>Lund High-Power Laser Facility:</i>	
Attosecond pulse generation,	
characterization and spectroscopy (Anne L’Huillier)	
Laser acceleration of particles (Claes-Göran Wahlström)	1500 (total)
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	<b>6600</b>

**Special comments:**

The situation in the Atomic astrophysics group at the Department of Astronomy is presently critical in terms of funding. It is suggested that the salary for a research associate (forskarassistent) for interaction with the Atomic Physics Division is guaranteed for 4 years using Linnaeus funds, conditioned that such a position is opened and filled. This money is part of the allocation indicated above, but has a longer time span. If a research associate position is granted from other sources, the LLC commitment is reduced to the “regular” level of 1200 kkr for 18 months.

The Attosecond and Laser acceleration projects are both pursued at the Lund High Power Laser Facility. It is suggested that the two responsible persons collaborate in using the allocated money in an optimum way.

An enquiry from Katarina Svanberg, Oncology Department, has been sent to the LLC (Attn.: Bengt E.Y. Svensson and Stefan Andersson-Engels) regarding the possibility of support for an adjoint professorship (limited to 3y) on 20%. Costs amount to about 200 kSEK/y. The grant could be financially integrated in the research proposed above, but would need a commitment, limited to 3 years. It is suggested that the LLC considers this enquiry in special order at its Board meeting.

For the LLC Research Committee  
Sune Svanberg, Chairman