

# **SFF V: Assessment Criteria**

## **applying for and setting up a centre of excellence**

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# Three Steps to Centre of Excellence



setting up a centre of excellence



## People also ask

What is a center of excellence model? 

What is a center of excellence in business? 

How do you create a center of excellence? 

### 3 STEPS TO ESTABLISHING A CENTER OF EXCELLENCE

1. Step 1: Define strategy and vision. The crucial part of creating success is to define the strategy and vision of the CoE. ...
2. Step 2: Secure funding. The second step involves the other important aspect of launching a CoE: the funding. ...
3. Step 3: Make the center operational.

Jul 7, 2016

## HOW TO SET UP A CENTER OF EXCELLENCE



# Three attempts at Centre of Excellence

- **SFF I: Centre and Network for Integrated Experimental and Theoretical Studies of Atomic and Molecular Clusters in Catalytic Processes — UNSUCCESSFUL**
  - Oslo (host), Bergen, Tromsø, Trondheim
  - not focussed — business as usual
- **SFF II: Centre for Theoretical and Computational Chemistry (CTCC)**
  - Tromsø (host) and Oslo
  - theoretical and experimental groups
- **SFF IV: Hylleraas Centre for Quantum Molecular Sciences**
  - Oslo (host) and Tromsø
  - theory groups only

REJECTED

**CTCC** The Centre for Theoretical  
and Computational Chemistry

 **Hylleraas**

# Diversity of Centres of Excellence

- CoEs differ widely not only in research but also size and organization



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Hylleraas

Roseland Centre for Solar Physics

Hybrid Technology Hub

REPROGRAMMING CANCER  
OMPROGRAMMERING AV KREFT

SAPIENCE  
CENTRE FOR EARLY SAPIENS BEHAVIOUR  
UNIVERSITY OF BERGEN

PoreLab  
NTNU-UIO Porous Media Laboratory

QuSpin



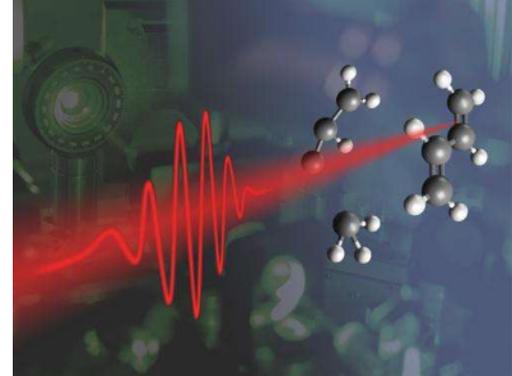
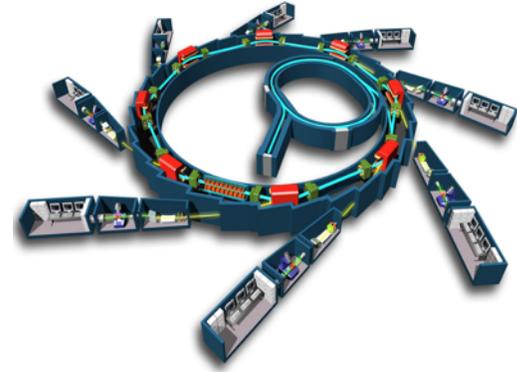
CENTRE FOR FERTILITY AND HEALTH

FAIR  
Centre for Experimental Research on Fairness, Inequality and Rationality



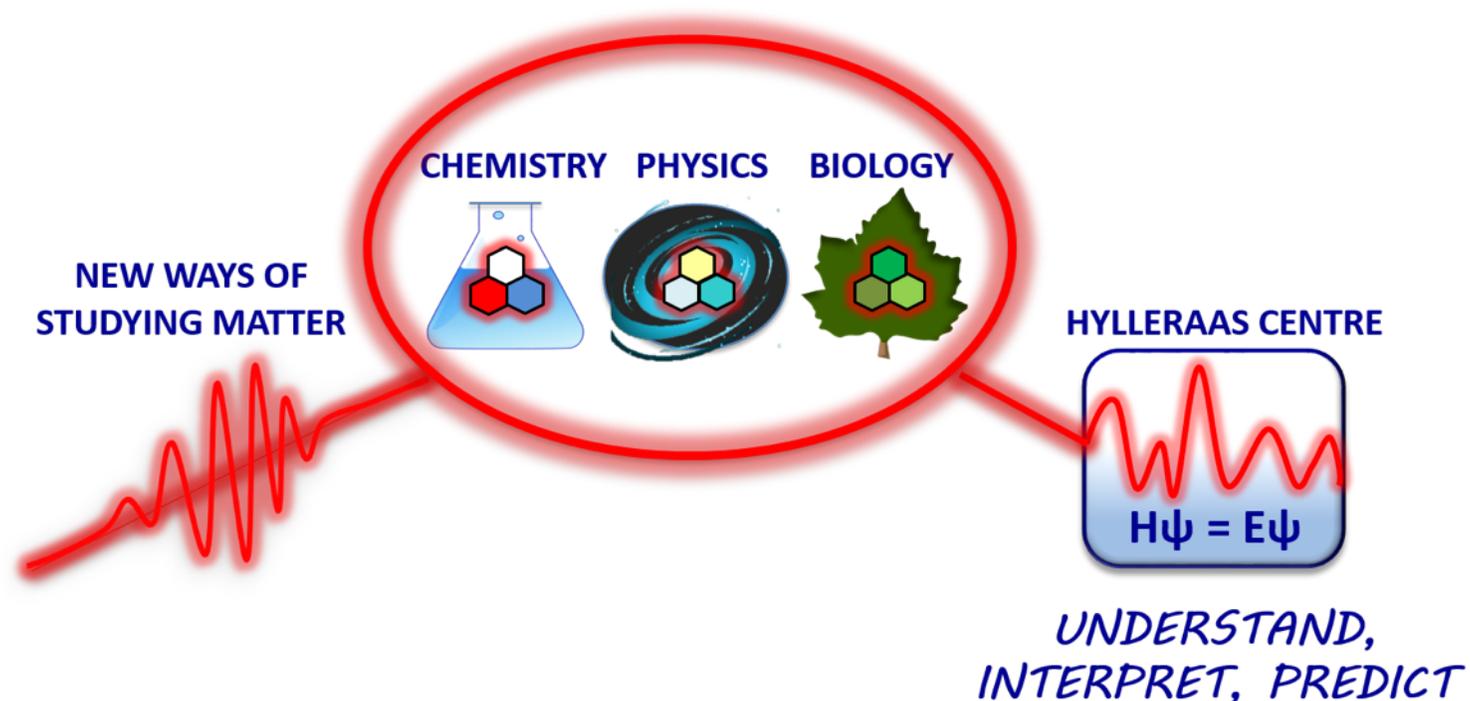
# Your motivation

- **Centre of Excellence must have a strong raison d'être**
  - identify an important knowledge gap and pose questions you can answer
  - must be easily understood outside your community
- **Motivation the Hylleraas Centre**
  - new experimental facilities study systems and unprecedented resolution
  - this revolution must be matched by revolution in computation
  - world-class expertise in the interaction of small molecules with radiation
  - recently added expertise in multiscale modelling for complex systems
  - study thousands of atoms interacting with tens of photons



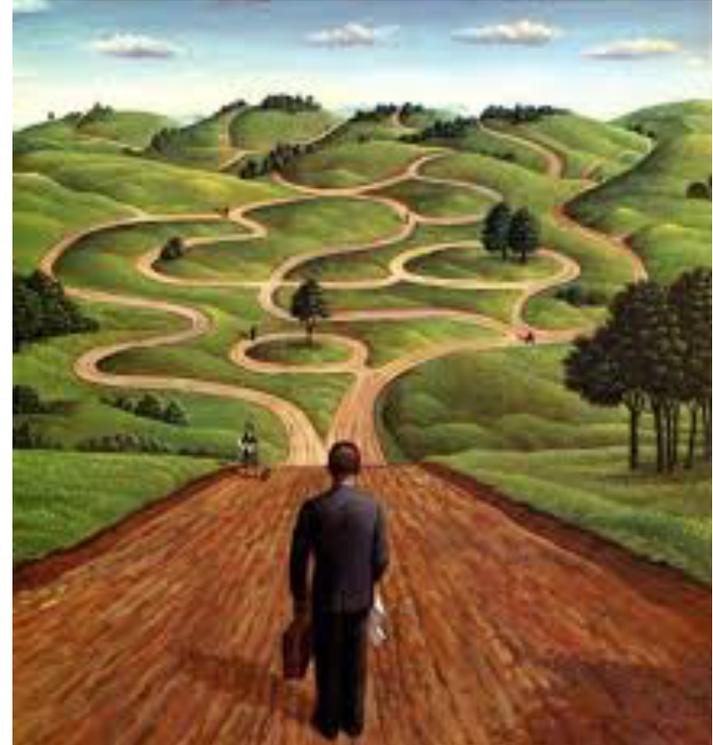
# Our (not so perfect) vision

*The Hylleraas Centre will develop and apply computational methods to understand, interpret, and predict new chemistry, physics, and biology of molecules in complex and extreme environments*



# The Long and Winding Road

- **Application is hard work**
  - application takes time and effort
  - first application 3 months, CTCC 13 months, Hylleraas 19 months
- **Match research goals to your competence and expertise**
  - play with ideas — try out different constellations
  - be prepared for frustrating false starts
  - be prepared to drop people
- **Our road to Hylleraas Centre**
  - many discussions with experimental groups
  - application for Endringsmiljø rejected
  - more than a year to arrive at final line-up and goals



# Study carefully all information from RCN

- Assessment procedures
- Assessment criteria
- Project description requirements

## Assessment criteria for SFF-IV

Proposals submitted for funding under SFF-IV will be assessed in relation to four main criteria in both phase 1 and phase 2 of the review process:

- 1) The research
- 2) The centre director
- 3) The principal investigators
- 4) The organisation of the centre

The project description in phase 1 is limited to five pages (+ one page copied from the summary and objectives in the application form), and the assessment must therefore focus on the basic ideas and methods of the planned research and the organisation of the centre. The project description in phase 2 is limited to 15 pages, and the assessment will review the research, methods, work plans and organisation in greater detail.

## Assessment procedures SFF-IV

### Phase 1

The most important components of phase 1 of the application assessment process are summarised below.

#### One Scientific Selection Committee consisting of three scientific subcommittees

Three subcommittees for

- social sciences and the humanities
- life sciences
- natural sciences and technology

will assess the grant proposals in phase 1. Each subcommittee will consist of about nine members. The joint Scientific Selection Committee, consisting of all the members of the scientific subcommittees, will have the full/sole responsibility for recommending the applicants to be invited to phase 2.

## The Centres of Excellence Scheme (SFF IV) 2015

### Requirements for the Project description, phase 2

- The Project description must be maximum 15+1 pages in length. A project description longer than 16 pages will not be possible to upload.
- The page format should be A4 with 2 cm margins, 12 pt font (Times New Roman) and single line spacing. For references and figure text, font size 9 can be used.
- The project description must be written in English.
- Do not include hyperlinks or graphic animation in the text – such content will not be assessed.

# SFF V evaluation criteria

- **Excellence**
  - novelty, solidity
  - potential for groundbreaking research, will it be internationally visible, will it contribute to results that other research can build upon
- **Impact**
  - will not be evaluated on it (step 1)
  - possible criteria - Impact is to build a world-leading environment in Norway, quality of the expected publications and other scientific results
- **Implementation**
  - CV and track record of Centre leader and PIs
  - centre leader and at least one PI must be at a high international level
  - organization of centre
- **Gender balance**
  - At least 40 % female Centre leader applicants in step 1



# First Criterion — Excellence

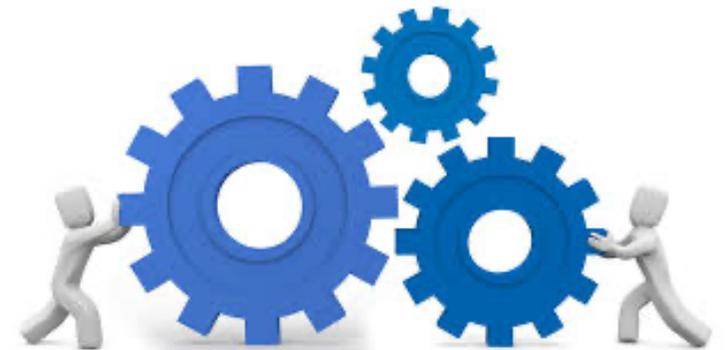
- Is there a clear vision behind the proposed research?
  - can it be formulated succinctly and be understood by generalists?
- Does the proposed research break new ground and open new doors?
  - does it fill a knowledge gap and address an important problem?
  - is the motivation for the centre convincing?
- Does the proposed research go beyond the state of the art?
  - are new concepts and approaches, new methodology introduced?
- Is the proposed research ambitious but still realistic?
  - are time scales and resources sufficient?
  - is it realistic in view of the background and CVs of the team?





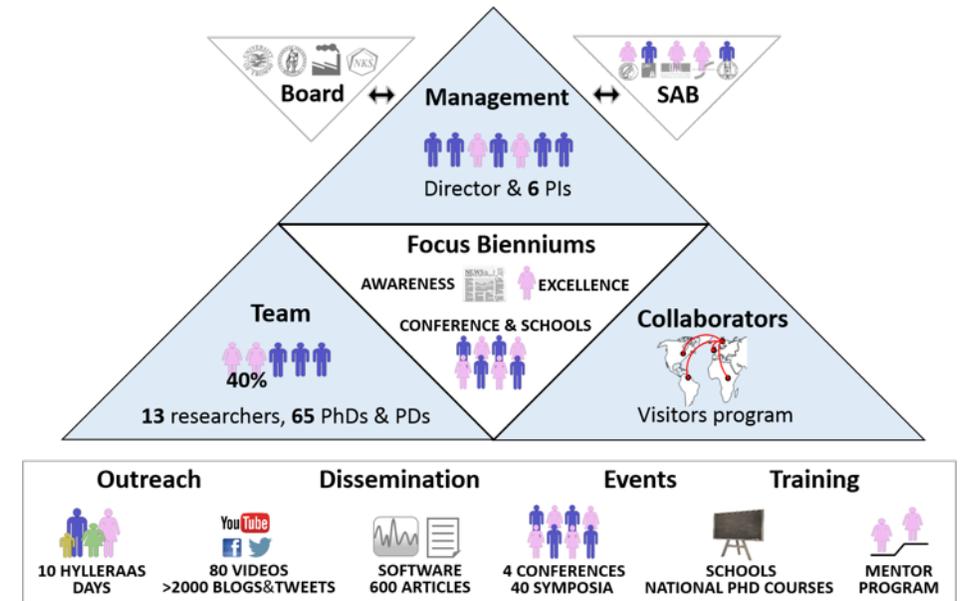
# Third Criterion — Implementation

- Do director and at least one PI have an international/accomplished track record?
  - has the director demonstrated ability to conduct ground-breaking research?
  - has the director demonstrated ability to lead — including training and advancement of the young?
- Do the young track records show promise?
  - is the track record of the young appropriate to their field and career stage?
- Does the total expertise match the proposal?
  - are the track records complementary?
  - is the team balanced and optimal for the proposed research?
  - are the research objectives dependent on the collaboration?
- Do all share the vision?
  - are all PIs committed to the centre — will they remain committed — is there a role for all?



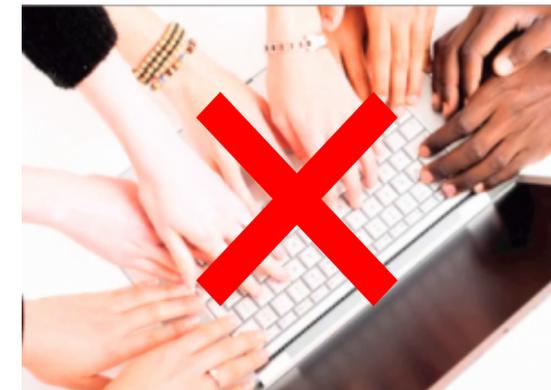
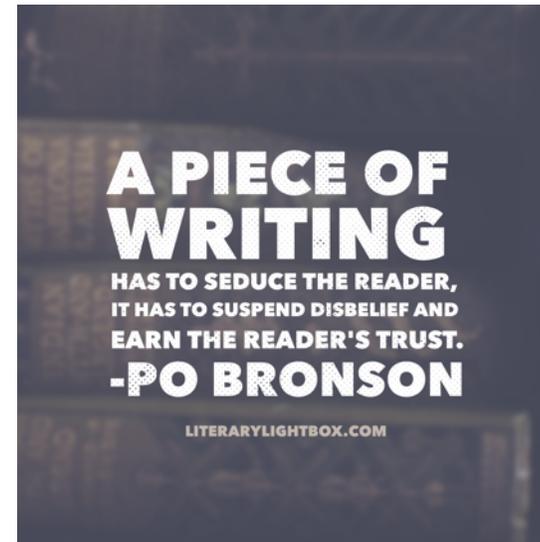
# Third Criterion — Organization

- Is the organization of the centre appropriate for the research?
  - support by the home institution management
  - communication across several institutions for shared centres
  - leadership and management — hierarchical or flat?
- Are sufficient resources allocated for centre activities?
  - mobility, visitors, travel, workshops, meetings,, networking
- Will the centre be attractive to young researchers?
  - how will the centre contribute to training of the young?
  - are there mechanisms for career development?
- Are there concerns regarding gender imbalance?
  - how are these addressed?



# Research proposal

- **Your proposal must have a narrative**
  - put your ideas into the head of the reader
  - you cannot explain all — seduce the reader
- **Proposal should should have one voice**
  - the writing must be forceful and purposeful
  - one person — not a committee — must be in charge
- **Address all assessment criteria**
  - also those that appear obvious to you
- **Write the short and long proposals in parallel**
  - you cannot undo the short proposal after submission



# Research proposal

- Test your proposal on others
  - seek advice and have time to revise
- Consult centre leaders
  - they are more than happy to advice
- Listen carefully to the reviewers
  - we used both UiO and UiT reviewers
- Spend time on your CVs
  - uniform look — play on your strengths
- Use illustrations to communicate ideas
  - structure and bring life to the proposal

Trygve Helgaker  
Hylleraas Centre

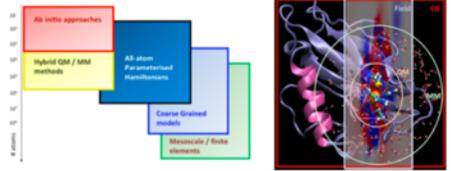


Figure 5: Left panel: multi-scale methods and their range of applicability; right panel: properties and phenomena that can be investigated by different methods.

vironment: **QM/QM, QM/MM, QM/PCM** [18, 19]. These models will give accurate descriptions of the dielectric response of the environment, taking also into account steric effects, thus providing crucial enabling tools for the research in RT3–RT5, while also contributing to RT6. The development of embedding schemes for multidimensional vibrational spectroscopy has recently received RCN-RP support (Ruud) and will be vigorously pursued in RT2.

At the other end of the scale, we will work on multi-resolution atomistic/coarse-grained/mesoscale simulations, developing, in particular, the **hybrid particle–field molecular-dynamics self-consistent-field (MD-SCF) method** [20]. This method describes particle–particle interactions by coupling the individual particles to an external potential dependent on the density. In this manner, intermolecular forces can be calculated in linear time, allowing simulations of quasi-atomistic resolution at scales that are today *hardly accessible even on the most powerful massively parallel architectures*. In RT2, we will extend the MD-SCF method to biological systems and biomaterial interfaces. Seed funding has been obtained from the *H2020 Marie Skłodowska-Curie Action (MSCA)* by Bindu and Cascella. All multiscale and multiresolution methods will be integrated in codes developed at the centre; in collaboration with Prof. G. Milano, our MD-SCF developments will also be incorporated in the OCCAM code. In the long term, we seek a unifying description connecting all resolutions up to the mesoscale.

**Objectives:** explicit treatment of the environment, coupling to external electromagnetic fields, accurate coarse-grained models for biological systems

**Beyond the State of the Art:** polarizable (density) embedding techniques for spectroscopic applications, hybrid particle–field MD-SCF models for biological systems

**Challenges:** dielectric and non-electrostatic environmental response, transferability of coarse-grained potentials

**Collaborators:** J. Kleinjung (Crick Institute, London), J. Kongsted (Southern Denmark), G. Milano (Salerno), J. M. H. Olsen (Southern Denmark)

**Theme Leaders:** M. Cascella (UiO, leader), B. O. Brandsdal (UiT, co-leader)

**RT3: Spectroscopic Processes**

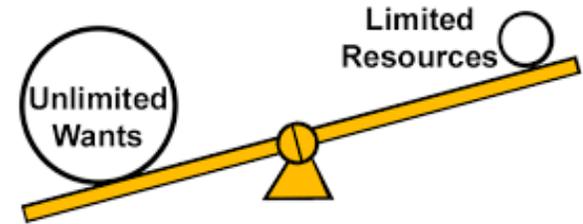
*To model interactions between complex systems and electromagnetic fields made accessible through fourth-generation light sources, we will develop novel multiscale models for calculating and predicting new spectroscopies.*

The detection of **response of matter to electromagnetic radiation** in different frequency ranges, from the high-energy, strongly perturbing X-ray regime to the more subtle interactions in the radio- and microwave region, is one of the most important tools for unravelling the structure and properties of molecules. Such responses can also be used to induce and control chemical reactions through, for example, photocatalytic and optogenetic processes. At the same time, the response of individual molecules can be strongly **altered by complex surroundings**—in surface-enhanced spectroscopies, for example, plasmonic resonances can greatly enhance the intensity of scattered light, allowing for single-molecule imaging and spectroscopy. With recent advances in laser optics and spectroscopy, we can in contrast design spectroscopic processes that allow us to see past the complexity: A non-linear process such as second-harmonic generation, for instance, is **interface specific**, being impervious to an isotropic surrounding. As reactions and processes often occur at interfaces, surfaces, and membranes, these regions are of great importance in chemistry and biology, and non-linear spectroscopy

5

# Principal investigators and their glue

- **Principal investigators must be selected carefully**
  - all must share the centre vision — and complement one another
- **Team dynamics changes when the centre becomes a reality**
  - a shared struggle to win the centre becomes a competition for its resources
- **The centre has limited resources**
  - you can only keep so many happy by serving them positions
  - do not spend all resources on positions
  - maintain generous programmes for visitors, workshops, etc
- **Create ownership and loyalty**
  - leadership and management, shared events, and so on



# Concluding remarks

- An SFF is a fantastic opportunity
  - basis for an environment that cannot otherwise be set up
  - cannot be set up based on individual research grants
  - a catalyst for individual grants that contribute significantly to the centre
- Thank you and submit in time!

