

## Funding Initiative

# Integration of Molecular Components in Functional Macroscopic Systems

## Final Deadline

August 2, 2016

## Information

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## VolkswagenStiftung

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## 1. Objectives

What application potentials lie latent in state-of-the-art nano-science, and how can more complex and functional systems be created with macroscopic functions based on this foundation? Up to now, research has only been able to provide partial answers to this question, underscoring the need for a significant expansion of known nano-engineering approaches and their harnessing as a high-technology.

By means of this funding initiative, the Foundation wishes to encourage research with the objective of completing the step from a molecular towards a complex systemic functionality. Within this context, the objective is to build on components controllable on the nanometer scale, suitably expanding existing state-of-the-art techniques in order to obtain effects utilizable at the macroscopic level. There are no restrictions on the choice of targeted functionality; however, the Foundation requires the **field of application** to be clearly defined and that there is the chance of realization at the end of the project. Applicants must possess a thorough understanding of the fundamental (bio)chemical and physical processes involved, as well as experience with the testing of new approaches of synthesis-chemistry and materials science in connection with the creation of functional compounds from different constituents, the characterization and optimization of structure and properties, as well as the technological implementation of prototypes in a functional system.

Possible approaches may lie in the areas of actuating elements, sensor technology and diagnostics, centralized transport or the conversion of energy; however, other areas may well be taken into consideration. Moreover, the Foundation may also consider proposals for research on synthetic systems and “machines” in analogy with biological systems, e.g. cells – especially if it is intended that they function in a similarly efficient and robust way as processes in nature. It should be possible to address and control the intended functionality by means of the variation of parameters or targeted stimulation. Synthetic-technical as well as bio-inspired approaches are encouraged to an equal extent. Proposals founded on the further development of established systems which remain void of new perspectives with regard to additional functionalities, addressability, and control or coupling on the molecular and macroscopic level will not be considered.

The fundamental components for the creation of a functional system may for instance include customized molecules like dendrimers or rotaxanes, DNA analogs or also new types of functionalized nanoparticles. Proposals founded on the use of established and commercially available nano-components such as Au55 or conventional semi-conductor nanoparticles, or modifications of same, will not be considered.

The Foundation therefore considers it important to encompass the entire **research chain**: including the production of molecular and nanoscopic components, their assembly, the integration at the molecular level controlled with conventional technology, the proof of functionality, or a prototype of a functional device. For this reason the Foundation will only consider proposals for projects which **integrate at least two or three elements of this research chain**. In addition to the surface and size effect it is crucial that the proposed research aims at a supplementary functionality which can be utilized and controlled on the macroscopic level.

## 2. Scope of Funding

The initiative is aimed primarily at a close cooperation between scientists drawn from the disciplines of physics, chemistry and biology, although research approaches and methods practiced in the field of medicine and certain areas of the engineering sciences may also be considered. The Foundation encourages above all proposals for interdisciplinary research projects, which can be freely designed within the extremely broad scope of the initiative, not only with respect to their content but also their project form. For instance, equally welcome are proposals for integrative joint projects with (foreign) cooperation partners, as well as applications to support outstanding individual research groups who either already encompass the various expert knowledge necessary for achieving the project objectives, or who will extend their respective expertise in the course of the project. Within the context of the projects also other requirements, such as laboratory rotations or visiting professorships and sabbaticals may be met. The project duration may be up to six years, thus taking into account project ideas which require a longer term of realization.

## 3. Restrictions

The Volkswagen Foundation cannot award funding for research topics which are included in the funding programs of other institutions – e.g. priority programs and collaborative research centers supported by the *Deutsche Forschungsgemeinschaft*, nor centers of competence or programs run by German government agencies or the EU.

## Electronic Application

Please use the Foundation's electronic application system in the internet.

[portal.volkswagenstiftung.de](http://portal.volkswagenstiftung.de)

Please remember to print the cover sheet provided, sign it, scan it and upload it. Instructions on the electronic application system are provided online and on the following page 4.

## 4. Application and Assessment

Applications will be subject to a two-stage review on an annual basis: initially the Foundation will accept only **project outlines**. Applications will be reviewed by the Foundation and a panel of international experts. On this basis the project proposals will be pre-selected, and successful applicants will then be invited to submit a full proposal in connection with a **personal presentation** of their project proposal in front of an interdisciplinary and international panel of experts at the Volkswagen Foundation offices in Hanover.

As outline proposals will be subject to peer review by a panel of international experts, applications must be submitted in **English**. The funding of projects will be initially for a period of up to three years, whereby subject to positive review and submission of a renewal proposal the period of funding may be extended to cover up to a further three years. The duration of individual sub-projects and personnel requirements are therefore to be determined case by case. Projects involving the participation of different research groups are to appoint a coordinator who will be responsible for the overall management of the project and reporting to the Foundation.

The VolkswagenStiftung can award grants to scientific institutions only. Applicants outside of universities and well-known publicly-maintained research institutions are asked to provide details on the legal status, statutes, trustees and boards, charitable/non-profit status, budgeting and auditing of the institution to be funded. Please, include any existing annual report of the applying institution.

## 5. Check-List for Pre-Proposals

Please submit your pre-proposal using the Foundation's electronic application system. The following data and documents (pdf-files) are requested:

- information on applicants, grant recipient (i. e. institutions)
- summary
- description of the proposed research (title, objectives, state of the art, expected results, methods, sketch of work plan; **5 pages**, 11 pt font size)
- short CV of each applicant including up to 10 most relevant publications (1 page each)
- budget in short tabular form for each group (personal costs, running costs, investments) as pdf-file uploaded under the heading "Budget"
- pdf-file of the cover sheet generated by the application system with signature of the leading applicant

## Electronic Application Made Easy – Instruction and Tips

The Volkswagen Foundation accepts pre-proposals and applications via its electronic application system [portal.volkswagenstiftung.de](http://portal.volkswagenstiftung.de). Please note that only registered users of the electronic application system have access to application data, can submit applications and receive corresponding e-mail messages. Hence, it is required for applicants with project responsibility to register him/herself or to ask a co-worker to register in his/her name with the proper e-mail address.

Please follow the six steps to compile and submit your application:

- If you are a new user please **register** at the application portal with your name, your e-mail address and your own password. When registering you will be asked about your work address details. Subsequently, you must **activate** your account using the link sent by e-mail. If you already have a user account you can immediately **login** using your e-mail address and password.
- The function **new application** starts the selection of the corresponding funding initiative (here: Functional Macroscopic Systems), the application type (here: pre-proposal), the grant-receiving institution, and the language.
- Now – and later on – you can interrupt the compilation of your application at any time. As required you can logout and login again.
- Please check whether the pre-filled data on the applicant are correct. Furthermore, we need application data (e. g. project title, duration) and the budget. The budget shall be uploaded as pdf-file under the heading “Budget”. You are asked to enter all information in the respective forms. Please note that the **save** button does not transfer any data to the Foundation. You are able to revise all data until the submission of your application. Please keep in mind to read and **accept** the legal statement. If you wish you can generate a PDF of the filled-in forms for verification and for your filing.
- Under enclosures you are able to upload files as required according to the checklist on the preceding page in the „Information for Applicants“. Only PDF files are accepted. Before submission all files can be exchanged for new versions.
- Once your application is complete you can submit it electronically to the Foundation. Additionally, a PDF generation of a cover sheet for print-out is required. Add your signature, scan it and upload it.

In the course of processing your application the Foundation might request additional information. The function **new supplement** is used to upload and submit the respective files namely also from the co-applicant and not only from the leading applicant.

### Technical Support

Please contact  
[support@volkswagenstiftung.de](mailto:support@volkswagenstiftung.de)  
for any technical questions when  
using the electronic application  
system