Research IDEAS
2020 Call Document

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1 Introduction

ZEISS is a global company world-wide known and recognized for high quality instrumentation and solutions for the semiconductor, automotive and mechanical engineering industries, biomedical research and medical technology, as well as eyeglass lenses, camera and cine lenses, binoculars and planetariums.

ZEISS and EPFL intend to collaborate in the field of Imaging and Digital Engineering, Application and Systems (IDEAS). To this purpose, a fund has been created to finance seed projects in fields of interest of EPFL and ZEISS.

The present document describes the focus areas and evaluation procedure of the fourth call launched through this collaboration.

2 Background and objectives

The IDEAS fund finances seed projects of typically one year in fields defined by the scientific committee (SC) with a budget of about 100 k€. The most promising projects may then be continued by a joint research project financed either by ZEISS or by other funding.

3 Focus areas

Several areas of mutual interest between Zeiss and EPFL have been identified by the SC. The present call focuses on the areas

- Quality control for advanced additive manufacturing
- Advanced concepts of additive manufacturing for novel mechatronic and optical components
- Integrated mechatronic/optical components enabling new functionalities
- Large-area surface functionalization and structuring for optical components (e.g. omniphobic, hardness, anti-fog, anti-microbial)

Some of the challenges associated with the above focus areas include:

- In situ detection of defects <typ. 10µm in depths > typ. 100µm on large (~100cm²) areas in additive manufacturing of metal.
- Laser-written waveguides (incl. FBG) in transparent curved substrates.
- Tailoring local mechanical properties of metals: e.g. low Young modulus and high thermal conductivity for hinges.
- 3D localization and orientation of a sensor head in a meter scale volume with µm spatial and µrad angular accuracy.
- Omniphobic (non „sticking“ surface) with excellence optical properties preferably with resistance against chemical and mechanical stress from disinfection procedure.
- Anti-fog treatment/coating of optical glass and polymer surfaces with excellent optical and handling properties (robust, very transparent, no straylight).
- Fast („seconds) photochromics (auto adaptation of transparency to light level) for lenses.
• Polymer with (high temperature) thermochromic properties, to get an indication of number of autoclave cycle.

These challenges are meant to be examples, not to be limiting with regard to problems that can be addressed in proposals.

4 Project selection process

4.1 General conditions

Preferred projects are feasibility investigations in preparation of larger long-term research projects. Although the ZEISS Fund is reserved to EPFL, the project may include external partners if needed. External partners’ activity will in principle not be funded by the ZEISS Fund.

The proposals should include the following elements:

• The topic proposed for the specific call.
• The expected outcomes of the Project.
• The expected timeline/duration and possible milestones.
• The estimated budget.
• The EPFL researchers and research groups involved with a clearly identified EPFL researcher as the PI and possible additional external partners, if any.

4.2 Project selection criteria

Applications will be evaluated based on the following criteria:

• Fit to the call topics.
• Scientific quality.
• Relevance of problem for application.
• Prospect of proposal (realistic plan, likelihood of potential follow-up).

4.3 Schedule

The submission process following the Calls for Proposals will be organized in a two-stage process in order to allow exchanges between the principal investigators (PI) and the scientific committee (SC):

1) Submission of proposals using a dedicated short template. The proposals will then be discussed during a meeting of the Scientific Committee and will be followed by a selection of projects for which a project proposal presentation will be asked for the 2nd stage evaluation.

2) Submission of a revised project proposals (if applicable) and a presentation followed by final decision on funding of proposals by the scientific committee.

Once the winning stage-2 proposal(s) has(ve) been selected by the Scientific Committee, a specific contract according to the Framework Agreement will be prepared for approval by both Parties.

The following schedule is planned for the fourth call:
## Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.11.2020</td>
<td>Launch</td>
<td></td>
</tr>
<tr>
<td>17.01.2021</td>
<td>Deadline for the submission of proposals</td>
<td>PIs</td>
</tr>
<tr>
<td>19.02.2021</td>
<td>Communication of evaluation and suggestions</td>
<td>SC</td>
</tr>
<tr>
<td>24.03.2021</td>
<td>Presentation of selected or revised proposals to the scientific committee</td>
<td>PIs</td>
</tr>
<tr>
<td>31.03.2021</td>
<td>Information on decisions by the scientific committee</td>
<td>SC</td>
</tr>
</tbody>
</table>

## 5 Budget

Each selected projects will be financed according to the accepted financial plan, which should target an amount of 100 K€ for a typical period of 12 months.

## 6 Organization and governance

### 6.1 Members of the scientific committee

The SC consists of representatives of EPFL and Zeiss:

**For ZEISS:**

Dr. Michael Kempe (Chairman),
Ralf Wolleschensky
Dr. Christoph Hauger
Dr. Michael Totzeck

**For EPFL:**

Prof. Christian Enz
Prof. Tobias Kippenberg
Prof. Yves Bellouard
Prof. Babak Falsafi

### 6.2 Role of the scientific committee

The role of the SC is to:

- Launch the Call for Proposals, typically once a year.
- Evaluate, suggest changes to and select the projects to be funded by ZEISS.
- Define the appropriate type of agreement in accordance with ZEISS and the laboratory/ies and TTO of EPFL.
- Follow-up the research results and advice for potential continuation.