

**Select Topics in Nanoscience and Nanotechnology
Special Notice 15-SN-0002
Amendment 0001**

The purpose of Amendment 0001 to 15-SN-0002 is to answer questions received in response to the Special Notice and amend the Special Notice as follows:

Applicable to all topics:

Q#1: The special notice limits the award instrument to grants. Does this restrict the awards to "academic universities" or can non-profits also participate? Are there other groups that can participate?

A#1: No, the special notice does not restrict awards to academic universities. Non-profits may also participate. For profit firms normally do not receive grants due to the nature of their work.

Applicable to Topic 1

Q#2: Could you kindly clarify whether the program focuses on self-assembly error detection in smaller-scale DNA nanostructures, such as DNA polyhedra, or larger-scale nanostructures, such as 2- and 3-dimensional DNA grids?

A#2: The program focuses on self-assembly error detection in larger-scale nanostructures. See amendment below.

Q#3: Does the program seek to primarily fund experimental studies, or would computational studies and/or computational-experimental collaborations be considered as well?

A#3: The program seeks to fund primarily experimental studies.

Applicable Topic # 2

Q#4: Carbides and Borides are specifically mentioned in the description of Topic #2 and the mechanisms of field assisted sintering may have a different pathway for different classes of materials. Is there a preference for certain class of materials, e.g. carbides, borides, or oxides?

A#4: The primary potential economic benefit of the process of *field assisted sintering* is for difficult-to-process materials. Most of these are the very-high-melting compounds such as the carbides and the borides – though tungsten is an example that is also of technological interest. From an economic standpoint, these are very important as tool materials and in other applications where very high refractory behavior is important to performance. The intent of the initiative is to understand the fundamental principles involved in the process, without regard to the materials involved. If multiple phenomena make up the process, it is important to pursue them.

Q#5: The Call states the following "The ability of the model to predict the required conditions for flash sintering and to explain the unprecedented high diffusion rates created will define success of the project." as the principal objective. What degree of balance are you seeking between theoretical vs. experimental work?

A#5: There is no pre-conceived balance between experimental and theoretical activities. It is recognized that it is unlikely for any group to use only experimental work to understand the fundamental mechanisms involved and that theoretical work will not be able to offer validated and verified results suitable for others to use for further activities in preparing materials. The exact balance is a matter left to the expertise of the principal investigator, who understands the specific activities they propose and the needs for modeling to support understanding.

Q#6: Are looking for development of computer models that can be used to implement flash sintering for fabrication of complex geometries?

A#6: The models developed in this project are important to understand the fundamental physical mechanisms involved in the process. These models, however, also represent the knowledge gained in a form that allows translation of this learning into new areas of application. Whilst the models created in the project may not be useful immediately to an engineer for the design of a process for a specific material, they will provide the basis for any engineering design tool that utilizes the process for some material and shape. The goal of this initiative is not an engineering design tool, but the goal is the quantitative understanding that will enable such an engineering design tool.

Applicable to Topic 3

Q#7: Is the available budget \$340,000.00 per award. Meaning \$170,000.00 per year for 2 years.

A#7: Yes, the available budget is \$340,000.00 per award, meaning \$170,000.00 per year for two (2) years.

Q#8: Is the focus of the program solely on the silicon or do we need to include research on packaging materials and coatings?

A#8: The focus of Topic 3 is on developing a processable silicon based device with competitive performance.

The Special Notice is hereby amended as follows:

1. Topic 1, new final sentence. Insert the following:

"The program focuses on self-assembly error detection in larger-scale nanostructures."