Proposal #1
Panel Summary Template

Objective(s) of the proposal

This proposal is about using some innovative techniques to produce 3-D printed nanostructured Na-ion capacitors which have greater conductivity and ion mobility. The PI proposes using a femtosecond laser to promote partial carbonization of the polyamide binder.

Intellectual Merit

Strengths:

Addresses a tough energy storage challenge: high energy density capacitors.

Investigates fundamental questions regarding application of a trendy manufacturing technique to a new process.

Weaknesses:

This seems like a very focused, specific hypothesis which encompasses many techniques which may or may not pan out. It seems be an expensive approach to making some incremental improvements.

Would like to see a theoretical energy density estimate and quantitative justification for believing that the device would achieve such a density.

Broader Impacts

Strengths: Applications are vast, and the ability to print one could make the invention very translatable.

Weaknesses: None.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)

The summary was read by/to the panel and the panel concurred that the summary accurately reflects the panel discussion.
Objective(s) of the proposal

(A sentence or two stating what the proposal is about)

The proposed project will investigate carbon-polymer templating at the nanoscale. Such materials exhibit many desirable capabilities. Three high-impact application platforms are identified for investigation (collagens, high performance fibers, and additives for green composites).

Intellectual Merit

Strengths:

PI has identified two possible hypotheses for templating (“flow” and “link”) and a strongly organized work plan. Strong preliminary data.

Weaknesses:

General motivation is that materials incorporating nano-carbon could revolutionize our material streams, however the main aim is to determine how such materials are structured. This project could be fraught with too many unknowns and thus perhaps too great a scope.

Broader Impacts

Strengths: More common materials would enable a greater “circular economy”. More affordable materials is also a plus.

Weaknesses:

None.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)

The summary was read by/to the panel and the panel concurred that the summary accurately reflects the panel discussion.
Proposal #3

Panel Summary Template

Objective(s) of the proposal

The PI proposes to synthesize large data sets and use lidar to develop new understanding of landslide mechanics and frequency. The goal is to make this knowledge publicly available in a real-time tool.

Intellectual Merit

Strengths:

Certainly appears to be a feasible project. Proposes using back analysis to validate this modeling approach.

Weaknesses:

Nothing terribly innovative, other than the merging of lidar and big data for this purpose. Aims 1 and 2 are vague and do not really point to an objective.

Broader Impacts

Strengths:

PI has done outreach with underrepresented minorities previously and proposes doing HS outreach related to this project.

Weaknesses:

Although landslides are certainly a horrible natural disaster, there are many other problems which cause much more than 7000 casualties and/or $4 billion of damage. Given the nature of this project and ultimate end-goal, the PI could propose more technical outreach to target users (municipalities, Army Corps of Engineers, etc) of the technique discussed here to minimize landslide damage.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)

The summary was read by/to the panel and the panel concurred that the summary accurately reflects the panel discussion.
Proposal #4

Panel Summary Template

Objective(s) of the proposal

The PI aims to create a theoretical basis for stakeholder-focused engineering, as opposed to solely design-focused engineering. The PI rather focused on systems-engineering, and will use techniques such as storytelling or games to better reach these goals.

Intellectual Merit

Strengths:

The proposed work could make engineering more successful in implementing solutions which better fit the needs of society.

Weaknesses:

The premise of the proposal is vague and does not really point to any concrete scientific objective. This proposal would have difficulty claiming success or failure because there is no real quantitative measure of the outcome. It would helpful to point to an example engineering challenge that they would test these techniques on.

Where does the environment fit in stakeholder-focused engineering?

Broader Impacts

Strengths:

This proposal has broad applicability.

Weaknesses:

Although possessing broad applicability, this type of research is difficult to translate into terms the general public and stakeholders would understand.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)
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Proposal #5

Panel Summary Template

Objective(s) of the proposal

This proposal aims to investigate using a multi-hazard analysis framework for material selection in structures.

Intellectual Merit

Strengths:

The PI has identified some case studies to examine this new paradigm change in thinking.

Weaknesses:

The goals of this proposal are vague. It is not clear if the concepts are really innovative, as the PI states that the trend is going in this direction anyway.

Broader Impacts

Strengths:

Has addressed all target groups.

Weaknesses:

Very little detail on what activities or specific actions that would be taken to address Broader Impacts.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)

The summary was read by/to the panel and the panel concurred that the summary accurately reflects the panel discussion.
Proposal 6

Panel Summary Template

Objective(s) of the proposal

This proposal aims to determine the factors which impact the flow of creative ideas through a design process.

Intellectual Merit

Strengths:

The proposal touches on an often underrated aspect of design, which is creativity, and creativity is either promoted or demoted in the design process.

The proposal will also look into the role of risk aversion and individual attitudes toward it.

Weaknesses:

A theoretical framework for future research to evaluate the role of creativity in design does not in itself produce new or useful knowledge.

How universally applicable is a concept selection or evaluation tool? While the notion of one is useful, one must wonder how it could be applied to different industries.

Broader Impacts

Strengths:

Project could help companies become more creative and/or sustainable.

PI states that the project will impact education of 200 women in Morocco.

Weaknesses:

Although this proposal could have broad impact, there must be a viable path to getting the ideas into industry. The impact this project could have on education objectives outlined is commendable, but ultimately these concepts and frameworks need to find their way out of academia and get tested in industry.

Panel Summary Statement

(One or two sentences summarizing the discussion – DO NOT mention any aspect of funding)
The summary was read by/to the panel and the panel concurred that the summary accurately reflects the panel discussion.