

MISSION

The MATERIALS sector consortium plays a pivotal role among the CANEUS consortia by providing advanced materials solutions for various sectors such as micro-and nano-satellites, structural health monitoring, fly-by-wireless, bioastronautics and energetics (including micro-propulsion).

The Materials Consortium will focus on high-risk, high-return materials development with a special emphasis on smart, multifunctional materials and structures for the aerospace and defence sectors. It will bring together the stakeholders, including scientists spanning a range of disciplines and end-users in the aerospace sector and will ensure that the work be conducted in close collaboration with all parties, meet all the requirements and needs possible and benefit each and everyone.

It will also pay attention to the possible applications of these materials to other sectors (nuclear industries, security, etc.)

Goals

- Will bring together materials scientists spanning a range of disciplines and will be conducted in close collaboration with all stakeholders at all TRL levers.
- Will co-ordinate the materials R&D in a rigorous and structured framework with clear objectives, milestones and a timeframe, in response to the needs of the end-user.
- Will, through CANEUS, seek adequate funding for each of these projects.
- In addition to developing new materials, create, as research progresses, an expert database containing structure-property relationships of micro and nanostructured materials, as well as who and where to find the related expertise.

REFINEMENT

It was decided with the members of the present Panelists of the Materials Sector Consortium that:

The projects to be funded should:

- be revolutionary rather than evolutionary.
- involve several institutions across the board, academia, governmental agencies, large space and aerospace corporation, but most importantly space and aerospace SMEs (we believe that a lot of innovative ideas are to be found there), and if possible be supra-national. Ideally (if not Caneus will provide for it) involve participants from several TRL levels

Strategy

- Development of structural meta-material for aerospace applications with the following desired embedded functionalities;
 - Lightweight, load-bearing
 - Distributed sensors/actuators
 - Distributed power generation
 - With protective coating/shielding/packaging
- Work out a standardized testing and characterization procedure specially suited for space and aerospace needs. Those needs are, among others:
 - radiation hardness
 - extreme temperature fluctuation resistance
 - exposure to vacuum and atomic oxygen
- Conceptual new aerospace materials
 - Deployable structures
 - Self healing materials

Plan

- Launch request for proposal to Caneus membership (or larger)

RFP to reps from all TRL levels

RFP writing team:

- Alain
- Eugene
- Max
- Roger

Release within 30 days

- Deadline to submit: within 30 day
- Review team needs to have all TRLs involved.
 - Need to find other members of review team, select from stakeholders
 - Potentials (NASA): Sylvia Johnson, Harry Partridge, Leslie (to be arranged by Milind and Rick)
 - Dr. Fong
 - Bruno
 - Deepak?

Review/selection timing goal of 30 days