



Stakeholder Meeting for the Fast Track Translational Project

24th July, 2023, 10.00AM-1.00PM

(through MSTeams online)

Link of online MSTeams meeting:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_NGI1ZDQ5NDQtZTBkOC00NjIxLTg0ODktNzIxNDUwYWRjMjQ0%40thread.v2/0?context=%7b%22Tid%22%3a%22b867f20e-8a9c-4603-b5ab-39c3840dfb64%22%2c%22Oid%22%3a%22e8c1e2ec-fc56-450a-aa2e-1daf3846f878%22%7d



Stakeholder Meeting for the Fast Track Translational Project

High Velocity Multi-hit Resistant Movable Protective Booth/Shack for Security Personnel
24th July, 2023, 10.00AM-1.00PM
(through MSTeams online)

Main Objective:

- Development of movable security booth/shack for a security personnel to resist multi-hits of small arms and light weapons

Background about project:

Team of scientists at Advanced Protective Structures and Mechanics Laboratory (APSML) within CSIR-SERC has been pursuing research and development in the area of analysis and design of protective structures for strategic sector. Specifically, it focuses on safety and security of personnel and critical infrastructures. Both experimental and computational mechanics-based studies are carried out towards the development of the products. Innovative material based efficient design of safe structures against shock/impulsive loads are mainly researched for better shock resistance. Laboratory is equipped with instrumented impact testing machine and a two-stage gas gun for impact tests.

In order to mitigate man-made hazards and counter threats like; terrorist activities in various regions of our country fast track translational and in-house projects are in progress. Hence, development of high velocity multi-hit resistant movable protective booth/shack for a security personnel is main focus of this project. The protective booth is being developed to provide desired level of safety during multi-hit situations that may arise due to use of automatic weapons and small calibre projectiles. The proposed security booth/shack will be portable and easy to dismantle, transport and erect at any other desired locations. The booth will be provided with wheels to move for better positioning as per requirement. The main advantage of the proposed security booth/shack is that all the materials used in the construction will be indigenous, repairable and reusable.

Deliverable:

- Prototype of movable and multi-hit resistant security booth/shack for a security personnel
- Repair methodology for impact damaged panels and other components/structures



Stakeholder Meeting for the ongoing R&D Project

Bio-Inspired Functionally Graded Cementitious Composite Panels (BI-FGCCP) for Enhanced Impact Resistance

24th July, 2023, 10.00AM-1.00PM
(through MSTeams online)

Main Objective:

- Development of Bio-Inspired FGCC panels and corresponding material model
- Performance evaluation of the BI-FGCC panels under impact loading
- Formulation of guidelines to design Bio-Inspired advanced protective structures against impact loading

Abstract of Project:

Composite targets are generally made by using two or more materials, either by inclusion of one into another or by joining them together. These composites generally provide homogeneous or like-homogeneous characteristics in various engineering applications. However, due to functional requirements the targets should have varied mechanical properties. For an efficient shock resistance ideally, no impedance mismatch should occur in the direction of shock wave propagation which can be achieved by changing mix compositions in graded manner. The main objective of gradation is to minimize or eliminate the interfacial mismatch of the properties which is likely to occur in the case of conventional layered composites. This project will focus on studying the synergetic advantages of bio-inspired structural forms and functional gradation of cementitious composites for enhanced impact resistance.

Deliverables:

- Comprehensive methodology for the casting of BI-FGCC panels
- Guidelines for the design of BI-FGCC panels for specified impact resistance