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Similitude laws and modelling experiments of explosion cratering in multi-layered geotechnical media

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Highlights

- The scaling law for an explosion cratering in multi-layered media is derived as being based on the scaling law governing cratering in a monolayer. The two factors influencing cratering effects are the wave impedance ratio of the layered media and the scaled depth of charge burial.
- Based on the use of a mini-spherical explosive charge and a pouring type of equivalent material, we carried out modelling experimental design and implementation of explosion cratering in multi-layered media.
- Generally, the basic law of explosion cratering in multi-layered media was obtained. The cone radius of the crater at the interface exhibited either expanding or necking phenomena. After analysis of the experimental data, the ejecting and bulging, and the crater geometries, as affected by the ratio of wave impedance and the scaled depth of burial, were assessed.

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