CABLE Conductor Manufacturing Prize

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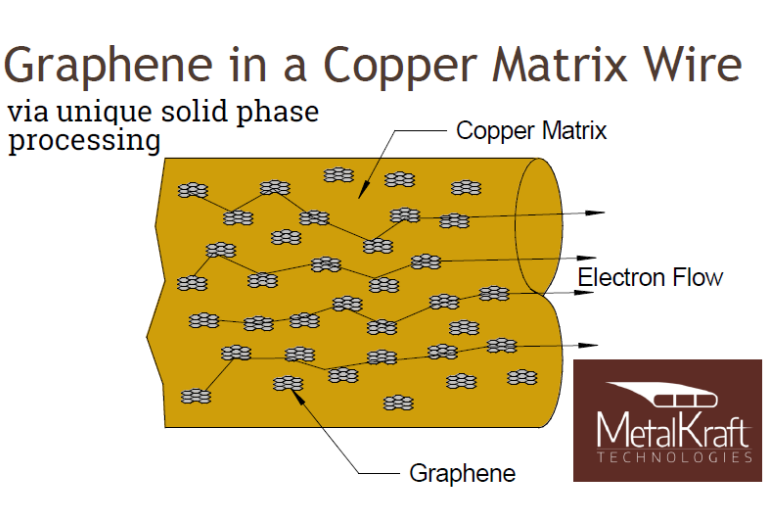
Submission Title:	Copper-Graphene Ultra Wire



Description of Material

- Copper-graphene composite wire achieving ≥ 64 MS/m conductivity
- Commercially available low-defect crystalline graphene nano-addititives (up to 0.016 wt.% or higher)
- Conductor grade copper metal matrix
- Graphene is sufficiently distributed, aligned, and cohered within the copper matrix

Fabrication Approach

- CVD to produce graphene on copper precursor foil material
- Assembly of foils into extrusion billets
- Use of standard bulk processes to make wire
- Hot-extrusion, ShAPE™ ,and re-processing to synthesize materials into a wire form with requisite amount of graphene

Potential Impact

- Ultra-conductive copper wire (≥64MS/m) for all applications where conventional copper wire is used
- High performance wire that is processed with conventional methods
- Performance and energy enhancements for all electric motors and devices, creating a new industry with tremendous energy savings and CO_2 reduction