NINESIGMA

Request for Proposal

NineSigma – Connecting technology seekers with solution providers around the globe

REQUEST # 65199

Improving the Electrical Conductivity of Copper

RESPONSE DUE DATE: **[3-4 weeks after launch]**

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SOLUTION PROVIDER HELP DESK

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Opportunity
Contract research, joint development

Timeline
Phase 1 – Proof of Concept in 12 months
Phase 2 – Commercial Optimization in 12 months

Financials
Phase 1 – Proof of Concept funding up to **US$ 100,000**
Phase 2 – Funding dependent upon adequate progress

DOWNLOAD PROPOSAL TEMPLATE

SUBMIT A PROPOSAL ONLINE

REGISTER ONLINE/UPDATE YOUR PROFILE

FREQUENTLY ASKED QUESTIONS

(click buttons above)

REQUEST FOR PROPOSAL DESCRIPTION

NineSigma, representing **the International Copper Association**, invites proposals for **technologies that improve the electrical conductivity of copper**.

The successful technology will:

- Improve the room-temperature electrical conductivity of copper by ≥ 20%
- Create a conductive material with significant impact on copper utilization
- Be robust to repeated thermal cycling across an operating range from -55 to 150 °C
- Preferably have anisotropic conductivity properties
- Preferably produce material that is formable into wires and other shapes

BACKGROUND

Copper has been and will continue to be vital to electrical transmission and heat transfer applications. Copper has the best electrical conductivity of all industrial metals and is widely available at reasonable cost. Copper's ductility allows it to be formed into wires, bars and other shapes required for electrical system components. An incremental improvement to copper's conductivity is likely to have positive impact on global energy efficiency. The question is if a research effort can achieve a level of room temperature electrical conductivity in copper that is higher than that of pure copper but lower than that achieved using cryogenically cooled superconducting materials (many of which contain copper).

The International Copper Association (ICA),[1] a trade association representing copper producers, fabricators, and processors, seeks to develop technologies that enhance copper performance in electrical energy transfer.

POSSIBLE APPROACHES

Possible approaches include, but are not limited to:

- Incorporation of synthetic conductive materials into copper structures
- Metallurgical processing methods
- Physical treatment methods
- Incorporation of carbon nanotubes in a copper matrix with appropriate transition materials to guide electrons
- Applying methods that increase thermal conductivity in metals

APPROACHES NOT OF INTEREST

The following approaches are not of interest:

- Use of toxic or radioactive materials
- Material processing methods that are inherently suitable only for low volume production

ANTICIPATED PROJECT PHASES OR PROJECT PLAN

Phase 1 – Proof of concept

Demonstration of technology functionality as well as detailed pathway and timeline for commercialization

Phase 2 – Commercial optimization

Commercial partner identification, business plan development, and technology refinement for commercial deployment

CRITERIA FOR MOVING FROM PHASE 1 TO PHASE 2

Client will consider for advancement research programs that make adequate progress toward commercialization.

APPROPRIATE RESPONSES TO THIS REQUEST

Responses from **companies** (small to large), **academic researchers**, other **research institutes**, **consultants**, **venture capitalists**, **entrepreneurs**, or **inventors** are welcome. For example:

I am a **company or academic person** with technology that meets minimum requirements and is ready for demonstration before transfer to commercial use.

I am a **company or academic person** with technology which will meet minimum requirements but that requires further research and development to ready it for transfer to commercial use.

RESPONDING TO THIS REQUEST

Appropriate responses will use the proposal template and address the following:

- High level description of proposed technology including:
  - Clear project objectives and activity
  - Method of measuring electrical conductivity
  - Technology maturity
  - Probability of success to scale-up
  - Pathway and timeline to commercial scale
- Team description including relevant assets and capabilities
- Intellectual property position
  - List of relevant patents, if available
  - Desired relationship with sponsor
- Willingness to work with third parties (e.g. development synergy, co-funding)

NON-CONFIDENTIAL DISCLOSURE

By submitting a Response you represent that the Response does not and will not be deemed to contain any confidential information of any kind whatsoever.

Your Response should be an executive summary (about 3 pages). The Response should briefly describe the technical approach and provide information on technology performance, background, and description of the responding team and their related experience.

By submitting a Response, you acknowledge that NineSigma's client reserves the sole and absolute right and discretion to select for award all, some, or none of the Responses received for this announcement. NineSigma's client also may choose to select only specific tasks within a proposal for award. NineSigma's client has the sole and absolute discretion to determine all award amounts.

RESPONSE EVALUATION

NineSigma's client will evaluate the **Response** using the following criteria:

- Overall scientific and technical merit of the proposed approach
- Approach to proof of concept or performance
- Potential for proprietary position (i.e., is the technology novel or protectable)
- Economic potential of concept
- Respondent's capabilities and related experience
- Realism of the proposed plan and cost estimates

The client will contact respondents with highly responsive proposals for next steps.

ENDNOTE

[1]International Copper Association (http://www.copperinfo.com/)