Request for Proposal RFP_2019_0171: Removing Organic Content from Caustic Brine Solution

RFP Title Removing Organic Content from Caustic Brine Solution

Due Date Sep 27

Opportunity Licensing, product acquisition, contract research, supplier agreement
Client has an immediate need to implement a solution and would like to see a technology demonstration by end of 2019.

Timeline Phase 1 – Proof of concept in 3-9 months
Phase 2 – Engineering development in 6-12 months

Financials Phase 1 – Proof of concept funding commensurate with proposed activity

RFP Description NineSigma, on behalf of **a global chemical company**, invites proposals for methods to reduce the total organic content in a caustic brine solution.

Background NineSigma's client has a manufacturing process that produces, as a byproduct, an aqueous caustic brine solution with some organic content (see Table 1) as a contaminant. The client would like to convert this brine solution into useful materials but is hindered by the presence of organics. Therefore, they seek a process to remove the organic content.

Table 1. Characteristics of aqueous brine solution.

Property	Value	Units	Notes
pH	11.5-12.5		
Salt Concentration	23	Wt%	
Total Organic Content (TOC)	10,000	ppm	Including isopropanol (1500 ppm), acetone (~50ppm) and the remainder as pentaerythritol in solution
Total Suspended Solids (TSS)	3500	ppm	Suspended solids are gelatinous.
Tin Content	1200	ppm	Tin chloride hydrates

NineSigma's client produces ~8700 L of brine solution per day and would need to process organics removal at a rate of 11-75 L/min at industrial scale.

Anticipated Project Phases or Project Plan

Phase 1 – Proof of concept

- Lab demonstration at 1-5 L scale

Phase 2 – Engineering development

- Optimize processing parameters
- Pilot scale process of 50-200 L/day
- Preparation for deployment in manufacturing setting, including certified engineering drawings for permitting

Criteria for Moving from Phase 1 to Phase 2
Client will consider for advancement an approach that meets performance criteria with acceptable economics and pathway to commercialization.

Key Success Criteria The successful technology will:

- Reduce the total organic content in a caustic brine from ~10,000 ppm to < 10 ppm
- Be compatible with aqueous brine characterized in Table 1
- Be repeatable and reliable

- Preferably, use facile operating conditions
- Preferably, be able to process 8700 L/day at industrial scale
- Be cost effective at industrial scale

Area of Interest

Chemistry
Chemistry-Organic
Chemistry-Physical
Engineering-Chemical
Chemistry-Organic > Separation
Environmental Sciences > Water Resource Management

Possible Approaches

Approaches not of Interest

- Client is not interested in approaches that rely on evaporation

Preferred Collaboration Types

Contract Research
Supply Agreement
Technology Licensing
To Be Negotiated

Items to be Submitted

Your response should not contain any confidential information.

NineSigma's client will evaluate all responses and choose those of greatest interest for direct discussions that could lead to contractual engagement for proof of concept demonstration or other commercial arrangements with selected respondent, to develop or adapt promising technologies or approaches.

Your response should address the following:

- Non-confidential description of proposed technology and working principle
- Availability of technical data including TOC removal efficiency, system throughput, and process parameters
- Technical maturity of the approach (concept, reduced to practice, prototype, ready to implement, available at industrial scale)
- Pathway to industrial scale including timing, estimated budget, and capacity for manufacture
- Estimated unit cost of technology (CAPEX, OPEX per unit volume)
- Position on intellectual property (patent granted, patent-pending, trade secret), patent references (if available), and your assessment of freedom to practice
- Desired relationship with sponsor
- Team description and related experience

Appropriate responses to this Request

Responses from companies (small to large), consultants, entrepreneurs, or inventors are welcome. For example:

- You represent a **company or university** that has demonstrated a proof of concept.
- You represent a **company or university** that has reduced method to practice at lab scale.
- You represent a **company or university** that has developed a method for use at pilot scale.
- You represent a **company or university** that has demonstrated a method ready for implementation at industrial scale.
- You represent a **technology transfer agency** that represents an inventor or technology holder who can demonstrate an approach to address the request.
- You represent a **university research department** that has a bench-scale demonstration ready to adapt.

- You represent a **university research department** that has an undeveloped pathway with a high probability of success.

Award Amount

Attachments No Files Selected

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Picture