

Aquitaine -Karnataka collaboration
Scientific Project for Pre-PhD student exchange

Scientific Proposal

Project Title	Defluoridation of Ground Water by Electro-coagulation Process
Scientific domain	Civil Engineering (Environmental Science)
Summary(10 lines)	<p>INTRODUCTION</p> <p>Water is one of the most important natural resource for mankind. Though 2/3rd of world is covered by water. Yet we find its scarcity. Our project is being carried out in and around laxmeshwar, were we find high concentration of fluoride. Many people are suffering from Dental fluorosis, Skeletal fluorosis, Crippling fluorosis and Non-skeletal fluorosis. Our project aims to purify water ie to remove fluoride content in water by Electrocoagulation process and provide safe and clean water for drinking and for other domestic propose. This process has many advantages like 1) No need to add chemicals, thus preventing secondary pollution and reduction of amount of generated sludge needing disposal. 2) Low reaction time and thus small size of reactor. 3) Simple operation and maintenance. 4) Floccs formed settle easily and are readily dewaterable. 5) The EC technique can be conveniently used in rural areas where electricity is not available, since a solar panel attached to the unit may be sufficient to carry out the process.</p> <p>Objectives of the Project</p> <p>The main objective of the present study was to evaluate the feasibility of electrocoagulation for defluoridation of ground water. Specific objectives are as follows:</p> <ol style="list-style-type: none"> 1. To review the literature for information and data on pollutant removal by electrocoagulation with specific emphasis on fluoride removal by electrocoagulation. 2. To study and understand the fundamentals of electrocoagulation process 3. To design, construct batch and continuous electrocoagulation reactor for defluoridation. 4. To study the effect of operating parameters such as : <ul style="list-style-type: none"> ✓ Effect of pH ✓ Effect of voltage ✓ Effect of current density ✓ Effect of electrolysis duration ✓ Effect of conductivity ✓ Effect of flow rate 5. To characterize the sludge generated after electrolytic defluoridation by SEM analysis.

	<p>6. To study the efficiency of different electrodes (aluminum and iron) for defluoridation of groundwater in various combinations as mentioned below:</p> <ul style="list-style-type: none"> ✓ Al-Al - Electrode ✓ Fe-Fe - Electrode <p>Treatment of actual groundwater sample by electrocoagulation collected from Laxmeshwara taluk.</p>
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Timing and duration for Project(give approximate ranges)	At the end of May-2015(4 Months Duration, i.e 02-02-2015 to 20-05-2015)
Representative References	Soujanya.V.K, Monika.G, Harshita.A, swetha.K.

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