

## QUESTIONNAIRE

(\* ) – mandatory fields

	<b>Details about organisation</b>
<b>* Organisation name</b>	Sota Rustaveli State University
Organisation acronym	SRSU
<b>* Organisation Activity Type</b> ( <b>RES</b> - Research, <b>HE</b> - University, <b>SME</b> - Small and Medium Enterprise, <b>IND</b> - Industry, <b>OTH</b> - Other)	HE
<b>* Keywords of main research areas</b>	Falsifications, naturalness, citrous, juice
<b>* Head of organisation (first name, family name)</b>	Aliosha Bakuridze
<b>* Post code</b>	6010
<b>* Country</b>	Georgia
<b>* City</b>	Batumi
<b>* Street, House</b>	35 Ninoshvili St.
<b>* Telephone (+ country &amp; city codes)</b>	(+995 222) 7-17-80
<b>* Fax (+ country &amp; city codes)</b>	(+995 222) 7-17-73
<b>* E-mail</b>	albak48@hotmail.com

<b>* Description of organisation and its research achievements for the last five years (~ 5000 signs)</b>
<p style="text-align: center;"><b>ISTC Project G -725 “Regeneration of Na- Cation exchangers by Sulfate – Natrium Solution and recycling of spent regenerating solution.”, successfully completed 2004-2008.</b></p> <p>Developed was the technology of Na-cation exchangers regeneration by natrium sulphate solution and the reuse of spent sulphate regenerant solutions after thermo chemical softening. Developed were the recommendations on carrying out regeneration of Na-cation exchangers by natrium sulphate and thermo chemical treatment of spent regenerant solutions for their reuse (appendix 8). Technical and economical comparison of regeneration variants for Na-cation exchangers showed that the proposed technology not only meets environmental requirements but also is economically sound.</p> <p>Developed was the mathematical model and the algorithm of each layer calculation for the regeneration process of the Na-cation exchanger. Developed was the package of computer programs (appendix 9) allowing:</p> <ul style="list-style-type: none"> <li>- to get the dependence of working exchange capacity on the specific discharge of the reagent;</li> <li>- to get the distribution of trapped ions along the layer (height) of the exchanger’s charge;</li> <li>- to get the distribution of the removed ions of hardness in portions of the regenerant solution;</li> <li>- to calculate optimal operating parameters for cation exchanger installations work..</li> </ul> <p>All these data can be got under any changes of input parameters of the cation exchanger The proposed package of programs can be used in designing new or reconstructing the existing cation exchanger installations and in investigating the process of exchangers regeneration as well as in an educational process in higher education institutions.</p>

In many chemical plants (the production of potash fertilizer, tungsten, cord and etc.) sodium sulphate is multiton industrial waste. The use of the technology for Na-cation exchangers regeneration by sodium sulphate is becoming more effective for environmental protection and for material expenditures while using for regeneration the solutions prepared from sodium sulphate which are industrial waste products.

	<b>Contact Information</b>
* <b>Contact person (first name, family name)</b>	Eteri Nijaradze
* <b>Department / Laboratory</b>	Department of Technology and Engineering Management
* <b>Position</b>	Full Professor
* <b>Qualification and research experience</b>	Ph. D. Leading Specialist Project G-725
* <b>Post address (house, street, city, code, country)</b>	17, 26 may St. flat 16, Batumi, Georgia, 6010
* <b>Telephone (+ country &amp; city codes)</b>	(+995 222) 7-05-57
* <b>Fax (+ country &amp; city codes)</b>	(+995 222) 7-68-49
* <b>E-mail</b>	e.nijaradze@rambler.ru

<b>International co-operation / Participation in EU RTD programmes or other bilateral / multilateral actions</b>
INTAS, TACIS, TEMPUS, COST, EUREKA, other RTD programmes (please specify programme/s, project title/s and year/s)
<b>ISTC Project G -725 “Regeneration of Na- Cation exchangers by Sulfate – Sodium Solution and recycling of spent regenerating solution.”, successfully completed 2004-2008.</b>

	<b>* Please, use “X” to indicate the scientific area/s of your potential project</b>
CHEMISTRY	
SOCIAL AND HUMAN SCIENCES	
ECONOMIC SCIENCES	
ENGINEERING SCIENCE	
ENVIRONMENT	
AGRICULTURE AND FOOD	X
HEALTH	
MATHEMATICS	
INFORMATION SCIENCE	
PHYSICS	
NANOTECHNOLOGIES	
ENERGY	

TRANSPORT	
SPACE	

**\* Summary of potential research project envisaged hosting of European researcher for the period of between 1 and 2 years**

**The development of methods for determining the naturalness of citrous juices.**

The quality of citric juice still remains one of the urgent matters, as this production doesn't completely meet the requirements raised by consumers.

The natural index is of great importance while evaluating the quality of citric juices. Breaking the natural quality of juice is very often considered as adulteration. The aim of adulteration one hand is the substitution of expensive raw materials for much cheaper ones, which is possible by adding outside juice into the given citric juice or by substituting fruit for the expressions of juice production. As a result, the technology of citric juice production breaks and causes the theft of state property and is considered as a criminal offence.

Adulteration reaches a large scale particularly during the production of juice concentrates when there is a chance of full substitution of fruits for expressions.

On the other hand adulteration of citric juices can be done by putting substances harmful for human organism.. For example, the adding of tartaric acid or synthetic lemon acid, different dyes, emulsifying agents, synthetic amino acids and etc. causes the production of ecologically bad quality product. The reason of said above is the lack of objective methods for controlling citric juices properly.

It is necessary to mention that the work of foreign investigators devoted to the problem of citric juices adulteration is generally specific only for individual regions such as the USA, Japan, Israel etc. The proposed methods of different authors are so various that in total they are not accessible practically without appropriate long term investigations on the own experimental material.

**This project** allows:

- to reveal physical and chemical indices which define natural quality of citric juices;
- to develop methods for their definition; to improve quality control for producing products.

**The aim of this project** is to define scientifically substantiated criterion for determining the natural quality of above mentioned juices and developing methods for their determination. The project refers to applied investigations as a result of which:

1. Qualitative and quantitative composition of organic acids, amino acids, sugar content substances, mineral substances of citric juices will be studied;
2. Physical and chemical indexes, the sum total of which defines their natural quality much deeply, will be defined.
3. The influence of different kind of naturalness disturbance and the change of citric juice will be studied;
4. The change of naturalness indices of citric juices depending on the process of ripening, hot treatment, during juices keeping and also on the soil-climate conditions of fruits growing will be studied;
5. The mathematical models of naturalness indices of citric juices will be developed;
6. The results of the investigations will be generalized and on the basis of revealed indices, the technical documentation will be developed.

The sphere of application for project's results- the developed methods for

determining the naturalness of citric juices can be used in the plants producing these juices , in all laboratories controlling the quality of food and in arbitration practice. The realization of TSTC aims- the project will give an opportunity to its executors from Georgia to use their qualification, knowledge and experience in the field of determining the quality of citric juices and to establish cooperation with scientists and specialists of the world-scientific

	<b>Please, confirm your agreement on data publication and dissemination</b>
<b>I agree with the publication of the data</b> on the web-site <a href="http://www.inco-ecca.net">http://www.inco-ecca.net</a> , and <b>dissemination</b> among Mobility National Contact Points of the EU MS and AC <b>(YES / NO)</b>	yes
<b>Date</b>	10.12.08