

Steps to a new ecology. Updated to 66 abstracts.

Abstracts, web-sites and references of more than 65 publications that contributed to innovations in environmental sciences, ecology, environmental safety and water sustainability, authored and co-authored by S.A.Ostroumov, Moscow State University.

Now 66 publications!

<http://5bio5.blogspot.com/2012/08/63-steps-to-new-ecology-updated-to-66.html>

Updated, Former file: 56 steps to a new ecology;

<http://www.scribd.com/doc/101736541/56-Innovations>

<http://5bio5.blogspot.com/2012/07/56-steps-to-new-ecology-56-publications.html>

66 publications, some of them with comments on what is new, and what is done for the first time, with info on availability online or in U.S. libraries.

Key words:

Landmark publications, new step, innovations, discoveries, new conceptualization, new terminology, environmental, science, ecology, toxicology, water quality, safety, pollution control,

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1. Innovative conceptualization of ecosystem's biomachinery (a new scientific term that was proposed by the author; it means ecological mechanisms that include biological communities and biodiversity) which improves water quality. The innovative experimental data analysis, concepts, and generalizations in this article provide the fundamental elements of the new qualitative theory of biocontrol of water quality in a systematized form. The theory covers water self-purification in freshwater and marine ecosystems. The theory is supported by the results of the author's experimental studies of the effects exerted by some chemical pollutants including synthetic surfactants, detergents, and other xenobiotics on aquatic organisms. The new fundamental conceptualization provides a basis for remediation of polluted aquatic ecosystems including purification of water bodies and streams, and briefly present the qualitative theory of the self-purification mechanism of aquatic ecosystems, phytoremediation and other types of technologies.

Ostroumov S. A. Biocontrol of Water Quality: Multifunctional Role of Biota in Water Self-Purification. – Russian Journal of General Chemistry, 2010, Vol. 80, No. 13, pp. 2754–2761; Abstract:

<http://www.chemeurope.com/en/publications/211554/biocontrol-of-water-quality-multifunctional-role-of-biota-in-water-self-purification.html>;

Abstract: <http://www.scribd.com/doc/75101299/>

Full text:

<http://www.scribd.com/doc/49131150/>; www.scribd.com/doc/49131150/;

<http://www.scribd.com/doc/73175163/>; DOI: 10.1134/S1070363210130086;

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2. Review of ecotoxicology of nanomaterials:

Ostroumov S.A., Kotelevtsev S.V. Toxicology of nanomaterials and environment. - Ecologica. 2011, vol. 18, issue 61, pp. 3-10.

www.scribd.com/doc/58103094/; <http://scipeople.ru/publication/102825/>

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3. A new conceptualization which is based on his suggestion to identify a new type of matter in the biosphere. The author called it «ex-living matter» (ELM). The author discusses his experiments (together with his co-authors) which provide the factual foundation to this conceptualization;

Ostroumov S.A. Some issues of chemico-biotic interactions and the new in the teaching on the biosphere / series: Ecological Studies, Hazards, Solutions. Volume 17. Moscow, MAX Press, 2011. – 20 p. ISBN 978-5-317-03710-9.;

[http://scipeople.ru/publication/102875/;](http://scipeople.ru/publication/102875/)

<http://www.scribd.com/doc/57818520/>

4. A review of the author's studies of aquatic organisms, mainly marine and freshwater invertebrates that are filter-feeders - biological filters - as an important part of the biosphere and hydrosphere. The studies were conducted in laboratories of four countries.

Ostroumov S.A. Biological filters are an important part of the biosphere // Science in Russia. 2009. № 2. P. 30-36. [The journal 'Science in Russia' is published by the Presidium of Russian Academy of Sciences, both in English and in Russian; Nauka Publishers, Moscow; ISSN 0869-7078. www.ras.ru, ©Russian Academy of Sciences Presidium.]

<https://sites.google.com/site/ostroumovsa/ostroumov-sa-biological-filters-are-an-important-part-of-the-biosphere--science-in-russia-2009--2-p-30-36>

<https://sites.google.com/site/ostroumovsa/ostroumov-sa-biological-filters-are-an-important-part-of-the-biosphere--science-in-russia-2009--2-p-30-36>

5. This paper formulated a fundamentally new solution to the problem of selecting criteria for identification and assessing environmental hazards of chemical pollutants, toxicants; the paper explains why the currently accepted set of criteria is non-efficient and leads to mistakes; Ostroumov S. A. Criteria of ecological hazards due to anthropogenic effects on the biota: searching for a system. - Dokl. Biol. Sci. (Doklady Biological Sciences). 2000; 371: 204-206. Doklady Biological Sciences: ISSN PRINT: 0012-4966. ISSN ONLINE: 1608-3105.

[http://sites.google.com/site/2000dbs371p204criteria/;](http://sites.google.com/site/2000dbs371p204criteria/) [www.scribd.com/doc/49088234;](http://www.scribd.com/doc/49088234)

Why this paper is useful: [http://www.scribd.com/doc/60891549/;](http://www.scribd.com/doc/60891549/)

Blog post:

<http://5bio5.blogspot.com/2012/07/fundamentally-new-solution-to-problem.html>

Blog post on a closely related paper in Rivista di Biologia:

<http://5bio5.blogspot.com/2012/07/a-new-concept-of-system-of-approaches.html>

A closely related paper: A new set of criteria in order to answer the question was formulated in this paper: is a given chemical substance hazardous to environment or not? Reference:

Ostroumov S.A. Anthropogenic effects on the biota: towards a new system of principles and criteria for analysis of ecological hazards.- Riv Biol (Rivista di Biologia) 2003, 96(1):159-169. Review.

<http://www.scribd.com/doc/52636721/> PMID: 12852181 [PubMed – indexed;

<http://www.scribd.com/doc/52636721/3-System-of-Criteria;>

key words:

innovation, new solution, criteria, assessment, environmental, ecological, hazards, danger, chemical, pollutants, toxicants,

6. This paper is the first publication that considered an aquatic ecosystem as an analog of a bioreactor, with some specific features that were described in the paper.

This paper gave a revolutionary new insight into the core functions and identity of ecosystem as a bioreactor to maintain water quality;

Ostroumov S. A. An aquatic ecosystem: a large-scale diversified bioreactor with a water self-purification function. - Doklady Biological Sciences, 2000. Vol. 374, P. 514-516. www.scribd.com/doc/49065542; <http://www.scribd.com/doc/49069997>;

7. This paper was the first that discovered the multi-faceted role of the entire broad range of aquatic organisms of all main groups of biodiversity in water self-purification. The conclusion was made that the complex of all the organisms, the entire biota is a unique (both changeable and fragile) part of the mechanism of ecosystem service to improve water quality;

The Concept of Aquatic Biota as a Labile and Vulnerable Component of the Water Self-Purification System. - Doklady Biological Sciences, Vol. 372, 2000, pp. 286–289. <http://www.scribd.com/doc/49069991>

<http://www.scribd.com/doc/49069991>;

8. It is the first paper that reported two new experimental results. First, the new author's experiments measured the biota-driven fluxes of the matter and chemical elements in a model ecosystem. Second, the authors got another innovative result: a discovery of effects of chemical pollutants. Namely, these biota-driven flows of the chemical elements were decreased by a chemical pollutant exemplified by a synthetic surfactant:

S. A. Ostroumov and M. P. Kolesnikov. Biocatalysis of Matter Transfer in a Microcosm Is Inhibited by a Contaminant: Effects of a Surfactant on *Limnea stagnalis*. [*Lymnaea stagnalis*] - Doklady Biological Sciences, Vol. 373, 2000, pp. 397–399. Translated from Doklady Akademii Nauk, Vol. 373, No. 2, 2000, pp. 278–280.

www.scribd.com/doc/49069985;

9. The paper discovered new mechanisms triggering eutrophication and as a result, a new solution to the problem of eutrophication:

Ostroumov S. A. The Synecological Approach to the Problem of Eutrophication. - Doklady Biological Sciences, 2001, v.381, No.1-6; pp.559-562.

<http://www.scribd.com/doc/49065550/>;

DOI: 10.1023/A:1013378505630;

10. First measurements, first publication: New quantitative data on how aquatic mollusks drive fluxes of the chemical elements.

Ostroumov S. A., M. P. Kolesnikov. Pellets of Some Mollusks in the Biogeochemical Flows of C, N, P, Si, and Al. - Doklady Biological Sciences, 2001, v.379, p.378-381.

[scribd.com/doc/49065604](http://www.scribd.com/doc/49065604); <http://www.scribd.com/doc/45911730>;

PMID: 12918380; [scribd.com/doc/49065604](http://www.scribd.com/doc/49065604); <http://www.scribd.com/doc/45911730>; DOI: 10.1023/A:1011620817764

11. Modernization and refreshing of the most fundamental concepts, notions, and terminology of ecology

Ostroumov S.A. New Definitions of the Concepts and Terms Ecosystem and Biogeocenosis; - Doklady Biological Sciences, 2002, v.383, No.1-6; pp.141-143.
[scribd.com/doc/49065580/](http://www.scribd.com/doc/49065580/);

DOI: 10.1023/A:1015393924967

12. New conceptualization of how all biodiversity of the aquatic organisms functions together toward up-grading water quality

Ostroumov S.A. On the Biotic Self-purification of Aquatic Ecosystems: Elements of the Theory. - Doklady Biological Sciences, 2004, v.396, No.1-6; pp.206-211.

<http://www.scribd.com/doc/48099028/> www.scribd.com/doc/48099028/4DB

S-On-the-Biotic-Self-Purification-fulltext;

DOI: 10.1023/B:DOBS.0000033278.12858.12

13. New approach and innovative methodology to experimentally analyze interactions of organisms Ostroumov S.A. Inhibitory Analysis of Regulatory Interactions in Trophic Webs. - Doklady Biological Sciences, 2001, v.377, No.1-6; pp.139-141.

www.scribd.com/doc/49065567 DOI: 10.1023/A:1019218026198

14. Discovery of a new type of negative effects of chemical pollutants on aquatic organisms and ecosystems.

Ostroumov S.A. Effect of Amphiphilic Chemicals on Filter-Feeding Marine Organisms. - Doklady Biological Sciences; 2001, v.378, No.1-6; pp.248-250.

<http://www.scribd.com/doc/49065593>; <http://www.scribd.com/doc/59417067/>;

15. The first publication that used the new terminology: two-level synergism; synecological summation. As a result, a new fundamental concept and terminology were introduced into environmental science, and ecology: Two-Level Synergism, Synecological Summation of Anthropogenic Effects:

Ostroumov S. A. The Hazard of a Two-Level Synergism of Synecological Summation of Anthropogenic Effects. - Doklady Biological Sciences, 2001, v.380, No.1-6; pp.499-501.

<http://www.scribd.com/doc/49065634/> www.scribd.com/doc/49065634/;

DOI: 10.1023/A:1012348127085

16. It is the first time that some negative effect of chemical pollutant (synthetic surfactant) on feeding activity of rotifers was discovered:

Ostroumov S.A., N. Walz; R. Rusche. Effect of a Cationic Amphiphilic Compound on Rotifers - Doklady Biological Sciences, 2003, v.390, No.1-6; pp.252-255;

<http://www.scribd.com/doc/52634169/> www.scribd.com/doc/52634169/3-Effect-of-a-cationic-amphiphilic-compound-on-rotifersDBN;

DOI: 10.1023/A:1024417903077

17. It is the first discovery of the new aspect of fundamental cause-effect link between the conservation of biodiversity and protection of water quality. This paper is the first that stresses that this is a two-way link:

Ostroumov S.A. Biodiversity Protection and Quality of Water: The Role of Feedbacks in Ecosystems. - Doklady Biological Sciences, 2002, v.382, No.1-6; pp.18-21;

Ostroumov S.A. Biodiversity Protection and Quality of Water: The Role of Feedbacks in Ecosystems. - Doklady Biological Sciences, 2002, v.382, No.1-6; pp.18-21;

[http://www.scribd.com/doc/42558469/
io1-02v382n1-E-water-Quality;](http://www.scribd.com/doc/42558469/io1-02v382n1-E-water-Quality) www.scribd.com/doc/42558469/Danb
DOI: 10.1023/A:1014465220673;

18. The first identification of a new type of negative effect of chemical pollutants:

Ostroumov S.A. A New Type of Effect of Potentially Hazardous Substances: Uncouplers of Pelagial–Benthal Coupling. - Doklady Biological Sciences, 2002. v.383, No.1-6; pp.127-130.

[http://www.scribd.com/doc/45913695/
new-Type-of-Effect-2DBS-fulltext;](http://www.scribd.com/doc/45913695/new-Type-of-Effect-2DBS-fulltext) www.scribd.com/doc/45913695/A-

DOI: 10.1023/A:1015385723150;

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19. Modernization of the system of principles for conservation of biodiversity;

Formulation of a new relevant principle: conservation and protection of a key aspect of ecosystem's service in up-grading water quality; an innovative suggestion to establish a special type of protected aquatoria to protect organisms that filter and purify water:

Ostroumov S.A. System of Principles for Conservation of the Biogeocenotic Function and the Biodiversity of Filter-Feeders. - Doklady Biological Sciences 2002, v.383, No.1-6; pp.147-150.

[http://www.scribd.com/doc/45911862;](http://www.scribd.com/doc/45911862)

[http://www.scribd.com/doc/49065586;](http://www.scribd.com/doc/49065586)

DOI: 10.1023/A:1015398125876

20. Innovative analysis of the factors that create environmental balance as related to plankton, which in turn is relevant to proper management of water resources, and water quality sustainability:

Ostroumov S. A. Imbalance of Factors Providing Control of Unicellular Plankton Populations Exposed to Anthropogenic Impact; - Doklady Biological Sciences, 2001, v.379, No.1-6; pp.341-343.

Full text: [https://sites.google.com/site/1dbs379p341imbalance/
scribd.com/doc/49065596](https://sites.google.com/site/1dbs379p341imbalance/scribd.com/doc/49065596) [scribd.com/doc/49065596;](http://www.scribd.com/doc/49065596)

DOI: 10.1023/A:1011600213221

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21. New fundamental concept: Synecological Summation of Anthropogenic Effects:

Ostroumov S.A. Responses of *Unio tumidus* to Mixed Chemical Preparations and the Hazard of Synecological Summation of Anthropogenic Effects. - Doklady Biological Sciences, 2001, v.380, No.1-6; pp.492-

495 [www.scribd.com/doc/49065621/;](http://www.scribd.com/doc/49065621/)

[scribd.com/doc/49065621/;](http://www.scribd.com/doc/49065621/)

DOI: 10.1023/A:1012344026176;

22. A new contribution to the scientific basis of phytoremediation and phytotechnology for water treatment:

Lazareva E. V.; Ostroumov S.A. Accelerated decrease in surfactant concentration in the water of a microcosm in the presence of plants: Innovations for phytotechnology .- Doklady Biological Sciences, 2009, v.425, No.1; pp.180-182.

<http://www.scribd.com/doc/60795487/>

in Russian: www.scribd.com/doc/61655262/

in English:

DOI: 10.1134/S0012496609020276

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23. The first discovery of the negative effect of the synthetic chemical pollutant (surfactant) on filter-feeding of zooplankton, and negative effects of the chemical of water filtering: Vorozhun I. M., S. A. Ostroumov. On studying the hazards of pollution of the biosphere: effects of sodium dodecylsulfate (SDS) on planktonic filter-feeders. - Doklady Biological Sciences, 2009, Vol. 425, pp. 133–134. ISSN 0012-4966.

Full text: <http://www.scribd.com/doc/45914806/> DOI:

10.1134/S0012496609020136; <http://www.springerlink.com/content/p7754h672w814m30/>;

24. It is the first paper in which a discovery of a new type of environmental hazards from chemical pollutants was made: namely, the hazards of a decrease in vital function of healthy aquatic ecosystems which maintain the proper level of cleanness (purity) of water, and improve water quality:

Ostroumov S. A. Identification of a new type of ecological hazard of chemicals: inhibition of processes of ecological remediation. - Doklady Biological Sciences. 2002. 385: 377-379. In Eng.; ISSN 0012-4966.

DOI 10.1023/A:1019929305267; <http://scipeople.ru/users/2943391/>; Full text: <http://www.scribd.com/doc/45911150/>;

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25. It is the first paper in which it was clearly proved that the synthetic chemical (exemplified by sodium dodecylsulfate), when it pollutes water, produces a dangerous effect on both marine mussels (*Mytilus edulis*) and phytoplankton: it decreases water filtration rate by the mussels, and the normal control of abundance of phytoplankton by the marine mussels, the control which is associated with the filtration of water.

Ostroumov S. A. An Amphiphilic Substance Inhibits the Mollusk Capacity to Filter out Phytoplankton Cells from Water; - Biology Bulletin, 2001, v.28, No.1; pp.95-102.

www.springerlink.com/index/1665628020163255.pdf;

Abstract, in detail: The effect of synthetic anionic surface active substance (SAS) sodium dodecylsulfate (SDS, 4 mg/l) on the kinetics of water filtration by mussel *Mytilus edulis* was studied. A suspension of algae *Isochrysis galbana* was added to the vessel with the mussels, and their filtration activity was measured by counting the concentration of the algae cells in the experimental vessels. Algae concentration was measured every 30 min for an hour and a half. The inhibiting effect on the mollusk filtration rate (FR) was qualitatively described. After the first 30 min filtration at 4 mg/l initial SDS concentration, the cell density was 322% of the control.

The inhibiting effect was observed later as well. Due to FR inhibition in the vessels with the above specified initial SDS concentration, the algae cell density was 6.4 and 14.7 times that of the control after 1 and 1.5 h, respectively. Thus, SAS SDS can decrease the natural capacity of aquatic ecosystems for self-purification and disturb other aspects of ecosystem functioning through inhibiting the filtration activity of mussels. The obtained data are discussed in the context of environment and hydrosphere protection from pollution.

www.springerlink.com/index/1665628020163255.pdf;

<http://www.scribd.com/doc/63444377/>

DOI: 10.1023/A:1026671024000

26.

It is the first paper in which a new solution to the eternal and painful problem of missing and shortage of proper objective criteria for identification of and assessing environmental hazards of chemical pollutants:

Criteria of ecological hazards due to anthropogenic effects on the biota: searching for a system. - Dokl Biol Sci (Doklady Biological Sciences). 2000; 371:2 04-206.

<http://www.scribd.com/doc/49088234>;

<http://sites.google.com/site/2000dbs371p204criteria/>; <http://sites.google.com/site/2000dbs371p204criteria/>; <http://www.scribd.com/doc/49088234>;

27.

It is the first paper in which a new aspect and facet of the essence and identity of ecosystem was discovered and analyzed. In this paper, it was shown that ecosystem has attributes of a bioreactor:

Ostroumov S. A. An aquatic ecosystem: a large-scale diversified bioreactor with a water self-purification function. - Doklady Biological Sciences, 2000. Vol. 374, P. 514-516.

[scribd.com/doc/49065542](http://www.scribd.com/doc/49065542);

<http://www.scribd.com/doc/49069997>; [scribd.com/doc/49065542](http://www.scribd.com/doc/49065542);

www.scribd.com/doc/49069997;

28.

A more detailed analysis of the discovery and innovation that was made in the paper above (An aquatic ecosystem: a large-scale diversified bioreactor with a water self-purification function. - Doklady Biological Sciences, 2000. 374: 514-516);

A new aspect of the identity of ecosystem was discovered and analyzed: the paper showed that ecosystem has attributes of a bioreactor:

Ostroumov S.A. Aquatic ecosystem as a bioreactor: water purification and some other functions. – Riv. Biol. 2004, 97(1): 67-78.

<http://www.scribd.com/doc/52656760/4Rivista-Biologia97p39Aquatic-Bioreactor-w-Add>

PMID: 15648211 [PubMed - indexed];

29.

A first and unique paper in which an international team of experts, scientists of three countries formulated a short list of research priorities in ecology and environmental sciences for the current century:

Ostroumov S.A., Dodson S.I., Hamilton D., Peterson S.A., Wetzel R.G. Medium-term and long-term priorities in ecological studies. – Riv. Biol. 2003, 96(2): 327-332.

PMID: 14595906 [PubMed - indexed for MEDLINE];
<http://www.scribd.com/doc/48100827/3Rivista-Bio-96-Priorities-2>;
<http://scipeople.com/uploads/materials/4389/3RivistaBio96Priorities2.rtf>
; www.scribd.com/doc/57124875/; <http://www.scribd.com/doc/52655707/> ;
PMID: 14595906 [PubMed]

30. A new set of criteria in order to answer the question was formulated in this paper: is a given chemical substance hazardous to environment or not?
Ostroumov S.A. Anthropogenic effects on the biota: towards a new system of principles and criteria for analysis of ecological hazards.- Riv Biol (Rivista di Biologia) 2003, 96(1):159-169. Review.

<http://www.scribd.com/doc/52636721/> PMID: 12852181 [PubMed – indexed];
<http://www.scribd.com/doc/52636721/3-System-of-Criteria>;

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31. More new data on how an anionic surfactant (detergent) sodium dodecyl sulfate (SDS) decreases the removal of algal cells from aquatic medium by marine bivalve *Mytilus edulis*: Ostroumov S.A. [An amphiphilic substance inhibits the mollusk capacity to filter phytoplankton cells from water]. - Izv Akad Nauk Ser Biol. 2001. (1):108-116. Russian. PMID: 11236572 [PubMed - indexed for MEDLINE];

<http://www.scribd.com/doc/63444377>

<http://www.scribd.com/doc/63444377/BiolBul2001-1p95-E-an-Amphiphilic-BB95-An-amphiphilic-substance-inhibits>; ** in Eng, in the form:

BIOLOGY BULLETIN, Volume 28, Number 1 (2001), 95-102,

DOI: 10.1023/A:1026671024000

An Amphiphilic Substance Inhibits the Mollusk Capacity to Filter out Phytoplankton Cells from Water

32. It is the first paper in which a synthesis of both authors new experimental data and international literature was made, which led to a new broad picture of the fundamental role of biological filtering in self-purification (and self-bioremediation, self-organization, as well as stability) of aquatic ecosystems.

Ostroumov S.A. Biological filtering and ecological machinery for self-purification and bioremediation in aquatic ecosystems: towards a holistic view. - Riv. Biol. 1998; 91(2):221-232. <http://www.scribd.com/doc/42830557>;

<http://www.citeulike.org/user/ATP/article/9750710>;

PMID: 9857844; PubMed – indexed;

33. It is the first article in which the new experimental data of the author were analyzed to give new fresh insight into ecological mechanisms of eutrophication and abnormal increase in phytoplankton. Also, new insight in how ecosystem runs water self-purification.

A fundamentally new approach and methodology to study top-down control in ecosystems: the first introduction of what the author calls ‘inhibitory analysis’; the paper presented a new insight in understanding that a decrease in activity of filter-feeders are part of the causes and mechanisms of eutrophication and algal blooms. The paper shows how to identify and measure this new factor which stimulates those negative phenomena;

More comment, and about citation of this paper:

<http://www.scribd.com/doc/61179989> Ostroumov S.A. Inhibitory analysis of top-down control: new keys to studying eutrophication, algal blooms, and water self-purification. – Hydrobiologia. 2002, vol. 469, p. 117-129;
<http://www.scribd.com/doc/52598579/>; DOI: 10.1023/A:1015559123646

34. The first publication in which a concise presentation is given of the author's theory of water self-purification. A short list of physical, chemical, and biological processes of water self-purification is given. One of the conclusions is: 'living organisms are the core component of the multitude of processes of the ecological machinery working towards improving water quality'.

Innovative and multifaceted conceptualization of how almost all aquatic organisms (biological community) work together toward making water clear and clean:

Ostroumov S.A. Polyfunctional role of biodiversity in processes leading to water purification: current conceptualizations and concluding remarks. - Hydrobiologia. 2002. V. 469 (1-3): 203-204. <http://www.scribd.com/doc/52627327/2H469p203-Polyfunctional-role-w-Addendum>

DOI: 10.1023/A:1015555022737

35. New facts on how detergents slow down the filtration of water by aquatic organisms (bivalve mussels, oysters and others):

Ostroumov S.A. Studying effects of some surfactants and detergents on filter-feeding bivalves. - Hydrobiologia. 2003. Vol. 500. P.341-344 [including effects of surfactants TDTMA and SDS on *Crassostrea gigas*]. Extended abstract and some info on citation of this paper: <http://www.scribd.com/doc/63898669/>;

Full text: <http://www.springerlink.com/content/k05884h730t228w4/>;

www.citeulike.org/user/ATP/article/9737871

DOI: 10.1023/A:1024604904065

[From the issue entitled "Aquatic Biodiversity"]

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36. The first paper that reports experiments that showed that all three main kinds of synthetic surfactants (detergent chemicals) slow down the filtration of water by marine organisms, filter-feeders (bivalve mussels of Atlantic Ocean, Latin name *Mytilus edulis*). The 3 main types of surfactants that were studied were representatives of the 3 classes: anionic, cationic, and non-ionic surfactants.

Ostroumov S.A., Widdows J. Inhibition of mussel suspension feeding by surfactants of three classes. - Hydrobiologia. 2006. Vol. 556, No.1. P. 381 – 386.

<http://www.scribd.com/doc/45958156/>; [scribd.com/doc/59544597/](http://www.scribd.com/doc/59544597/);

DOI: 10.1007/s10750-005-1200-7

Indexed in Web of science.

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37. A first book that summarizes the author's 20 year long studies of new environmental hazards from synthetic detergents, and innovative methods for measuring environmental toxicity and phytotoxicity of chemicals:

Ostroumov S.A. Biological Effects of Surfactants. CRC Press. Taylor & Francis. Boca Raton, London, New York. 2006. 279 p.

<http://www.citeulike.org/user/ATP/article/9744280>;
http://www.goodreads.com/book/show/1527248.Biolo_Eff_of_Surf;
<http://www.scribd.com/doc/46637373/>;
DOI: 10.1201/9781420021295.fmatt

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Chapter 1. Anthropogenic Impacts and Synthetic Surfactants as Pollutants of Aquatic Ecosystems

DOI: 10.1201/9781420021295.ch1

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Chapter 2. Organisms and Methods [that were studied and used in the book to perform bioassay and assessment of environmental hazards and toxicity of surfactants and detergents]:

DOI: 10.1201/9781420021295.ch2;

Chapter 7: DOI: 10.1201/9781420021295.ch7

38. New terminology was introduced in the paper: ecological tax; ecological repair of water quality;

Ostroumov S.A. Some aspects of water filtering activity of filter-feeders. - *Hydrobiologia*. 2005. Vol. 542, No. 1. P. 275 –

286. www.scribd.com/doc/44105992/; www.scribd.com/doc/44105992/

DOI: 10.1007/s10750-004-1875-1

Some aspects of water filtering activity of filter-feeders

From the issue entitled "Aquatic Biodiversity II"

Indexed, Web of Science.

39. A detailed well-structured presentation of the author's innovative and multifaceted conceptualization of how almost all aquatic organisms work together toward making water clear and clean:

Ostroumov S. A. On the Multifunctional Role of the Biota in the Self-Purification of Aquatic Ecosystems. - *Russian Journal of Ecology*, 2005. Vol. 36, No. 6, P. 414-420.

<http://www.scribd.com/doc/45572968>; <http://www.scribd.com/doc/49131150>;

DOI: 10.1007/s11184-005-0095-x

Indexed, Web of Science.

40. It is the first opinion and review paper in which a multi-aspect innovative analysis of the ecological role of organisms that filter water was given. It discovered a set of functions and mechanisms which form and improve water quality:

Ostroumov S.A. Suspension-feeders as factors influencing water quality in aquatic ecosystems. In: *The Comparative Roles of Suspension-Feeders in Ecosystems*, R.F. Dame, S. Olenin (Eds), Springer, Dordrecht, 2004. pp. 147-164.

http://books.google.ru/books/about/The_comparative_roles_of_suspension_feed.html?id=A7k_xTx3VFYC&redir_esc=y;

<http://www.springerlink.com/content/q871733861050601/> DOI: 10.1007/1-4020-3030-4_9

41. A detailed well-structured presentation of the author's innovative and multifaceted conceptualization of how almost all aquatic organisms work together toward making marine and estuarine water clear and clean.

**

It is the first time, a new concept and the term 'biomachinery' is formulated; in these publication, it is the first time that the new term 'biomachinery' was introduced; It is the first time that the new concept and term 'biomachinery' was applied to ecosystem. It is the first time that water self-purification in aquatic ecosystems was considered as an example of functioning of biomachinery. More comment:

<http://www.scribd.com/doc/61779321/>

Ostroumov S.A. Biomachinery for maintaining water quality and natural water self-purification in marine and estuarine systems: elements of a qualitative theory. -

International Journal of Oceans and Oceanography. 2006. Volume 1, No.1. p.111-118. [ISSN 0973-2667]. www.vliz.be/imisdocs/publications/100141.pdf;

42. Long-term studies of the biological effect of surfactants, including the effect surfactants exert on filter feeders, are reviewed. The role of filter feeders in the functioning of freshwater and marine ecosystems is analyzed. New aspects in the assessment of environmental hazard due to the impact of chemical pollutants, including surfactants and detergents, are established.

Ostroumov S.A. The effect of synthetic surfactants on the hydrobiological mechanisms of water self-purification. - Water Resources. 2004. Volume 31, Number 5, p. 502-510. <http://www.scribd.com/doc/41169530/WR502>; DOI 10.1023/B:WARE.0000041919.77628.8d.

In Russian: <http://www.scribd.com/doc/57648905/4VodnResursy-R>;
DOI: 10.1023/B:WARE.0000041919.77628.8d

43. Generalizations presented in this paper represent, in systematized form, the basic elements of the qualitative theory of water self-purification in freshwater and marine ecosystems. Recommendations are given for maintaining water quality and sustainable development of water resources. Results of experimental studies of the effect exerted by the surfactant Triton X-100 and the OMO synthetic detergent on mollusks *Unio tumidus*.

Ostroumov S. A. On some issues of maintaining water quality and self-purification.- Water Resources, 2005. Volume 32, Number 3, p. 305-313. ISSN 0097-8078 (Print) 1608-344X (Online).

<http://www.scribd.com/doc/57511892/0305> ; DOI 10.1007/s11268-005-0039-7.

www.scribd.com/doc/57511892/

DOI: 10.1007/s11268-005-0039-7

44. One of the authors of published reviews of the book called it 'Russian Silent Spring'. One of the first books that created the fundamentals of conservation biology. This work examines the problems arising from the deterioration of the environment and covers the issues of conservation and biodiversity protection at the molecular-genetic, the ontogenetic, the species-population and the ecosystem levels. The book offers suggestions concerning changes in practice in agriculture, industry, recreation etc. – in all sectors of society life and functioning.

Yablokov A.V., S.A.Ostroumov. Conservation of Living Nature and Resources: Problems, Trends, and Prospects. Berlin, New York et al. Springer. 1991. 272 p.

Index of Authors: p. 249-251. Subject Index: p. 253-271. ISBN 3-540-52096-1; ISBN 0-387-52096-1. On the book: <http://www.scribd.com/doc/59415099/>;

45. It is the first paper in which it was clearly shown that aquatic biota (the sum of organisms) is the core part of the ecological mechanism of water self-purification in healthy aquatic ecosystems. The important attributes of this core part of the mechanism are: 1) lability; 2) vulnerability to anthropogenic impact.

**

Another draft of the comment:

The author formulated a new fundamental concept of the complex of organisms of aquatic ecosystem. According to the concept, the biota is a central, labile and vulnerable (to pollutants) part of the ecological mechanism of water self-purification and upgrade of water quality.

Key words: Geoscience, water quality, assessment of biological activity of surfactants, chemical pollution, self-purification of water, aquatic organisms, contaminants, aquatic ecosystems:

Ostroumov S.A. The Concept of Aquatic Biota as a Labile and Vulnerable Component of the Water Self-Purification System. - Doklady Biological Sciences, Vol. 372, 2000, pp. 286–289.

<http://sites.google.com/site/2000dbs372p286biotalabil/>;

Translated from Doklady Akademii Nauk, Vol. 372, No. 2, 2000, pp. 279–282.

Original Russian Text Copyright © 2000 by Ostroumov.

Self-purification of water is a complex process including physical, chemical, and biological components [1–3]. The vulnerability of different components of the water self-purification system to anthropogenic factors is as yet insufficiently understood. The goal of this work was to review the literature and our own unpublished experimental findings concerning potential vulnerability of the biotic component of the water self-purification system to chemical pollutants.

A new role of biota as a core, labile, vulnerable part of ecosystem and upgrade of water quality

www.scribd.com/doc/49069991/;

46. It is the first study in which it was shown that the vital function of aquatic organisms (catalysis of matter transfer, and biogeochemical flows of chemical elements through the water column in the normal ecosystem) is decreased by the chemical pollutant as represented by a synthetic surfactant:

S. A. Ostroumov and M. P. Kolesnikov. Biocatalysis of Matter Transfer in a Microcosm Is Inhibited by a Contaminant: Effects of a Surfactant on *Limnea [Lymnaea] stagnalis*. - Doklady Biological Sciences, Vol. 373, 2000, pp. 397–399. Translated from Doklady Akademii Nauk, Vol. 373, No. 2, 2000, pp. 278–280.

scribd.com/doc/49069985/;

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47. New fundamental concepts were formulated in the concept:

1) a two-level synergism;

2) synecological summation of man-made effects.

S.A.Ostroumov; The Hazard of a Two-Level Synergism of Synecological Summation of Anthropogenic Effects // Doklady Biological Sciences, 2001, vol.380, p.499-501;

(Rus. P. 847); two-level synergism;

<http://www.scribd.com/doc/49065634/>;

[http://www.scribd.com/doc/49065634/Danbio52-2001v380p847-E-2level-synergism](http://www.scribd.com/doc/49065634/Danbio52-2001v380p847-E-2level-synergism;);

it was above

DOI: 10.1023/A:1012348127085

**

48. The first data on discovery that chemical pollutants (detergents and surfactants) decreased the filtration rate by the mass freshwater mollusks, freshwater mussels *Unio tumidus*. A new type of complex anthropogenic effects on ecosystem was found which the author proposed to name 'synecological summation'.

S.A. Ostroumov. Responses of *Unio tumidus* to Mixed Chemical Preparations and the Hazard of Synecological Summation of Anthropogenic Effects. - Doklady Biological Sciences, 2001, vol. 380, p. 492-

495; [scribd.com/doc/49065621/](http://www.scribd.com/doc/49065621/);

<http://www.scribd.com/doc/49065621/>;

Danbio51.2001v380.E.U.tumidus;

it was above

49. The first measurements of the contribution of the pellets of aquatic mollusks to the biogeochemical flows of the chemical elements C, N, P, Si, and Al:

S. A. Ostroumov, M. P. Kolesnikov. Pellets of some mollusks in the biogeochemical flows of C, N, P, Si, and Al. - Doklady Biological Sciences, 2001, v.379, p.378-381; see item 10

[scribd.com/doc/49065604/](http://www.scribd.com/doc/49065604/);

<http://www.scribd.com/doc/45911730/>;

50. The first data on the new negative effects of organic pollutants - detergents and surfactants - on functioning of marine bivalve mollusks. The first data on how the detergents and surfactants slow down (inhibit) water filtration by those bivalve mollusks, mussels and oysters which are of huge importance to aquaculture:

Ostroumov S. A. Effect of Amphiphilic Chemicals on Filter-Feeding Marine Organisms. - Doklady Biological Sciences, 2001, v.378, No.1-6; pp.248-250.

[scribd.com/doc/49065604/](http://www.scribd.com/doc/49065604/);

<http://www.scribd.com/doc/45911730/>;

<http://www.scribd.com/doc/49065593/>

; <http://www.scribd.com/doc/59417067/>;

DOI: 10.1023/A:1019270825775

51. A discovery of a new method to do bioassay of chemicals; discovery of a new form of phytotoxicity:

Ostroumov S.A., Maksimov V.N. Bioassay of surfactants based on the disruption of seedling attachment to the substrate and rhizoderm root hair formation // Biology Bulletin of the Academy of Sciences of the USSR (May 1992); (ISSN 0098-2164) Vol. 18(4) p. 383-386;

Translated from: Izvestiia Akademii Nauk SSSR, Serii Biologicheskaya, (4), 1991, p. 571-575.

<http://agris.fao.org/agris-search/search/display.do?f=1992%2FUS%2FUS92232.xml%3BUS9180902>;
AVAILABLE AT: National Agricultural Library, USDA, U.S.A. (United States of America), 10301 Baltimore Avenue, Beltsville, Md. 20705; Contact: <http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL: <http://www.nal.usda.gov>;
KEY WORDS: bioassay, plant seedlings, surfactants, detergents, pollutants, hazard assessment, new methods, phytotoxicity, ecotoxicology; AGRIS Categories: Pollution; Plant ecology; AGROVOC English terms: Fagopyrum esculentum; Brassica alba; Triticum aestivum; Indicator plants; Root hairs; Seedlings; Surface active agents; Bioassays; Pollution; AGROVOC French terms: Plante indicatrice; Poil absorbant; Plantule; Surfactant; Dosage biologique; Pollution; AGROVOC Spanish terms: Plantas indicadoras; Pelos radicales; Plantulas; Surfactantes; Ensayo biologico; Polucion;

52. The first discovery of negative effects of a laundry detergent on flagellates, euglens.

Ostroumov, S.A.; Wasternack, K. Response of photo-organotrophously growing green flagellates to water pollution by the detergent preparation "Kristall" // Moscow University Biological Sciences Bulletin (1991) [ISSN 0096-3925] Vol. 46(2), p. 66-67. Translated from: Vestnik Moskovskogo Universiteta. Biologiya, v. 46 (2), 1991, p. 67-68. <http://agris.fao.org/agris-search/search/display.do?f=1992%2FUS%2FUS92239.xml%3BUS9180000>;

AVAILABLE AT: National Agricultural Library, USDA, U.S.A. (United States of America), 10301 Baltimore Avenue, Beltsville, Md. 20705; Contact: <http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL: <http://www.nal.usda.gov>;

KEY WORDS: bioassay, surfactants, detergents, pollutants, hazard assessment, new methods, phytotoxicity, Protista, ecotoxicology, euglens, *Euglena*; AGRIS Categories: Pollution; Plant ecology; AGROVOC English terms: Indicator plants; Mastigophora; Water pollution; Surface active agents; AGROVOC French terms: Plante indicatrice; Pollution de l'eau; Surfactant; AGROVOC Spanish terms: Plantas indicadoras; Polucion del agua; Surfactantes;

53. A first discovery of the negative effects of a cationic surfactant on the growth and elongation of plant seedlings (*Fagopyrum esculentum*) and on behavior of leeches (*Hirudo medicinalis*);

Ostroumov, S.A. (Moscow State University) Response of test-organisms to water pollution with quaternary ammonia compounds. - Water Resources (1992) [ISSN 0097-8078] Vol. 18(2), p. 171-175; Translated from: Vodnye Resursy, v.18 (2), March-April, 1991, p.112-116.

<http://agris.fao.org/agris-search/search/display.do?f=1992%2FUS%2FUS92235.xml%3BUS9176736>;

AVAILABLE AT: National Agricultural Library, USDA, U.S.A. 10301 Baltimore Avenue, Beltsville, Md. 20705; U.S.A. Contact:

<http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL: <http://www.nal.usda.gov>;

KEY WORDS: water quality, bioassay, plant seedlings, cationic, surfactants, detergents, pollutants, hazard assessment, new methods, phytotoxicity, ecotoxicology, leeches, *Hirudo medicinalis*, behavior, sublethal; **AGRIS Categories:** Miscellaneous plant disorders; Pollution; **AGROVOC English terms:** Water pollution; Quaternary ammonium compounds; Testing; *Fagopyrum esculentum*; Phytotoxicity; **AGROVOC French terms:** Pollution de l'eau; Compose d'ammonium quaternaire; Testage; Phytotoxicite; **AGROVOC Spanish terms:** Polucion del agua; Compuestos amonicos cuaternarios; Ensayo; Fitotoxicidad;

54. A series of innovative variants and modifications of the methods for bioassaying phytotoxicity using plants, especially plant seedlings:

Ostroumov, S.A. Problems of assessment of biological activity of xenobiotics .-

Moscow University Biological Sciences Bulletin (1990) Vol. 45(2), p. 26-32; (ISSN 0096-3925)

Translated from: *Vestnik Moskovskogo Universiteta Biologii*, v. 45 (2), 1990, p. 27-34. AVAILABLE AT: National Agricultural Library, USDA, U.S.A. 10301

Baltimore Avenue, Beltsville, Md. 20705; U.S.A. Contact:

<http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL: <http://www.nal.usda.gov>;

KEY WORDS: Plant seedlings, surfactants, detergents, pollutants, hazard assessment, new methods, bioassay, phytotoxicity, ecotoxicology; **AGRIS Categories:** Plant physiology and biochemistry; Protection of plants - General aspects; Pollution ; **AGROVOC English terms:** Pesticides; Pollutants; Water pollution; Bioassays; Indicator plants; Germination; **AGROVOC French terms:** Pesticide; Polluant; Pollution de l'eau; Dosage biologique; Plante indicatrice; Germination; **AGROVOC Spanish terms:** Plaguicidas; Contaminantes; Polucion del agua; Ensayo biologico; Plantas indicadoras; Germinacion

55. This is the first time it was shown that the nanoparticles of gold (Au) in substantial amount bind to the living biomass of the aquatic plant (macrophyte), *Ceratophyllum demersum*. The concentrations of gold were measured in the samples of the phytomass using neutron activation analysis (NAA). As a result of the binding and/or immobilization of the nanoparticles, the amount of gold in the samples of the phytomass increased manifold above the background level of gold in the plant tissues. The increase was by two orders of magnitude. The new data added some new information to the modern vision of the multifunctional role of the biota in the migration of elements in aquatic ecosystems [9, 10]. Also, the result added new information to the studies of interactions of gold with organisms [17-23] that may contribute to new biotechnologies:

Ostroumov, S.A., Kolesov, G.M., Interaction of nanoparticles of gold with aquatic plant: Binding to *Ceratophyllum demersum* // *Ecologica* (2010) Vol. 17 (57) p. 3-6. [ISSN 0354-3285]

Affiliation:

Ostroumov, S.A., [M.V. Lomonosov Moscow State University, Moscow (Russian Federation); Faculty of Biology]; Kolesov, G.M., [Russian Academy of Sciences, Moscow; V.I. Vernadsky Institute of Geochemistry and Analytical Chemistry]

AVAILABLE AT: National Agricultural Library, USDA, U.S.A. 10301
Baltimore Avenue, Beltsville, MD. 20705; U.S.A. Contact:
<http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL:
<http://www.nal.usda.gov>;

Key words: nanoparticles, nanomaterials, fate in environment, aquatic systems, aquatic plants, macrophytes; neutron activation analysis (NAA); environmental chemistry;

AGRIS Categories Plant physiology and biochemistry; Aquatic ecology AGROVOC English terms Ceratophyllaceae; Aquatic plants; Gold; Biomass; Plant tissues; Tissue analysis; Chemical composition; Aquatic communities; Aquatic environment; AGROVOC French terms Ceratophyllaceae; Plante aquatique; Or; Biomasse; Tissu végétal; Analyse de tissu; Composition chimique; Communauté aquatique; Milieu aquatique; AGROVOC Spanish terms Ceratophyllaceae; Plantas acuáticas; Oro; Biomasa; Tejidos vegetales; Análisis de tejidos; Composición química; Comunidades acuáticas; Ambiente acuático;

56. New data on how detergents and surfactants slow down the filtration rate and suspension feeding of bivalve mollusks that are being cultivated in aquaculture.

Воздействие синтетических поверхностно-активных веществ и смесевых препаратов на моллюсков, используемых в аквакультуре // Рыбное хозяйство 2009, No. 3; 92-94. (in Russian); (ISSN 0131-6184)

Translation of the title of the paper into English: Effects of the synthetic surfactants and chemical mixtures on marine mollusks used in aquaculture;

AVAILABLE AT: National Agricultural Library, USDA, U.S.A. 10301
Baltimore Avenue, Beltsville, MD. 20705; U.S.A. Contact:
<http://www.nal.usda.gov/services/request.shtml>; Email: access@nal.usda.gov; URL:
<http://www.nal.usda.gov>;

KEY WORDS: TDTMA, SDS, *Crassostrea gigas*, effects, detergents, surfactants, *C. gigas*, *Mytilus galloprovincialis*, *edulis*, bivalves, water quality, bioassay;

AGRIS Categories: Aquaculture production and management; AGROVOC English terms: Oysters; Mussels; Aquaculture; Surfactants; Environmental impact; Filtration; Russian federation; AGROVOC French terms: Huitre; Moule; Aquaculture; Surfactant; Impact sur l'environnement; Filtration; Fédération de Russie; AGROVOC Spanish terms: Ostra; Mejillon; Acuicultura; Surfactantes; Impacto ambiental; Filtración; Federación de Rusia;

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57.

This is the first paper that demonstrated that this species of aquatic plants (macrophytes) is instrumental in decreasing the levels of 4 heavy metals in water in case of multi-metal pollution. It is a significant contribution to creating an innovative green technology of water treatment:

S. A. Ostroumov, and T. V. Shestakova. Decreasing the measurable concentrations of Cu, Zn, Cd, and Pb in the water of the experimental systems containing *Ceratophyllum demersum*: The phytoremediation potential. - DOKLADY BIOLOGICAL SCIENCES. Volume 428, Number 1 (2009), 444-447;
DOI: 10.1134/S0012496609050159;

Full text online free:

<https://sites.google.com/site/9dbs444/decreasing-the-measurable-concentrations-of-cu-zn-cd-and-pb-in-the-water>

**

58.

This is the first paper that discovered that in aquatic medium, nanoparticles of metal can be immobilized by aquatic plants (macrophytes). This is a very innovative contribution to our knowledge on nanomaterials. Until this paper next to nothing was known what happens with nanomaterials when they enter the aquatic environment with aquatic organisms:

S.A. Ostroumov, G.M. Kolesov. The Aquatic Macrophyte *Ceratophyllum demersum* Immobilizes Au Nanoparticles after Their Addition to Water. - Doklady Biological Sciences, 2010, Vol. 431, pp. 124–127.

Full text: <http://www.scribd.com/doc/45579375>;

The article is indexed by PubMed. It is on SpringerLink.

www.springerlink.com/index/J487667871W02H28.pdf;

<http://www.springerlink.com/content/j487667871w02h28/>; DOI:

10.1134/S0012496610020158; ISSN 0012-4966, © Pleiades Publishing, Ltd., 2010.

Translated from: Doklady Akademii Nauk, 2010, Vol. 431, No. 4, pp. 566–569.

See:

<https://docs.google.com/fileview?id=0B589QnrA6gkoNGU3ZTJiM2ItYjBmMy00MmRkLThkMTYtYmVkMWJiNGVIMmJl&hl=en>;

<http://www.scribd.com/doc/41165833>;

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59.

E. A. Solomonova and S. A. Ostroumov. Tolerance of an Aquatic Macrophyte *Potamogeton crispus* L. to Sodium Dodecyl Sulphate. - Moscow University Biological Sciences Bulletin, 2007, Vol. 62, No. 4, p. 176–179.

http://www.researchgate.net/profile/Sergei_Ostroumov/blog/6643_ToleranceMacrophytes;

DOI: 10.3103/S0096392507040074;

<http://www.scribd.com/doc/45556848>;

This is the first paper that reports quantitative information on the concentrations of this important chemical pollutants which are within the tolerance of the species of aquatic plants. This paper proposed innovative methodology of how to find this information, and the methodology is applicable in case of other chemical pollutants and other species of plants. This is a very innovative step toward developing new green technology to treat polluted water.

**

60.

This paper is the first publication that reported the concentrations of a number of rare earth elements in biodetritus. The rare earth elements are a key component of modern hi-technology products and they are a new component in the modern solid wastes and waste waters. This paper is an innovative and significant contribution to the database for modern environmental monitoring.

Ostroumov, S. A.; Kolesov, G. M. The role of biodetritus in accumulation of elements in aquatic ecosystems. - Contemporary Problems of Ecology, Vol. 3, No. 4. (2010), pp. 369-373.

**

This is the first study to determine concentrations of some elements in biodetritus. Biodetritus that formed over a 7-month period in aquatic microcosms with mollusks *Viviparus viviparus*, *Unio pictorum*, and aquatic plants *Ceratophyllum demersum* contained a number of elements. Neutron activation analysis showed that the elements' concentrations decrease in the following order: Ca > Zn > Ba > Br > Ce > Se > Nd > La > U > Hf > Sb > Th > Sm > S > Cs > Au. The data obtained contribute to understanding of the multi-functional (polyfunctional) role of aquatic organisms in aquatic ecosystems.

Key

words: [Zn](#), [viviparus](#), [unio](#), [U](#), [Th](#), [Sm](#), [Se](#), [Sb](#), [rare](#), [pictorum](#), [Nd](#), [La](#), [Hf](#), [elements](#), [ecosystems](#), [earth](#), [detritus](#), [demersum](#), [Cs](#), [ceratophyllum](#), [Ce](#), [Ca](#), [Br](#), [Ba](#), [Au](#), [aquatic](#), [biogeochemistry](#),
doi: 10.1134/S1995425510040016; Key: citeulike:7868320;

FullText article see:

SpringerLink: <http://www.springerlink.com/content/430423n1v5g4q818/>

61.

Study of the interactions between *Elodea canadensis* and CuO nanoparticles.

This is the first paper that reported that nanomaterial that contain oxide of heavy metal (exemplified by copper) after entering aquatic environment can be immobilized by aquatic plant biomass. This is an absolutely innovative and extremely important contribution to environmental toxicology and chemistry of toxic nanomaterials. Toxic nanoparticles are a new type of hazards from environmental pollution.

Johnson M. E., Ostroumov S. A., Tyson J. F., Xing B. Study of the interactions between *Elodea canadensis* and CuO nanoparticles. - Russian Journal of General Chemistry, 2011, Vol. 81, No. 13, pp. 2688-2693, doi:10.1134/S107036321113010X;

**

62.

The paper explained the new terms (ecological chemomediators, ecological chemoregulators) that were coined in 1986 in the book S.A.Ostroumov 'Introduction to Biochemical Ecology'. Since 1986, the book and the new terminology became a part of educational content of a number of courses in universities of at least five countries.

Title of the paper: On the concepts of biochemical ecology and hydrobiology: Ecological chemomediators.

Author(s): Ostroumov S. A.

Source: CONTEMPORARY PROBLEMS OF ECOLOGY, Volume: 1, Issue: 2, Pages: 238-244; Published: APR 2008;

DOI: 10.1134/S1995425508020100

Full English text online free: <http://www.scribd.com/doc/41634664>;

Abstract, additional sites: <http://www.scribd.com/doc/75100692>;

Connection with the book Introduction to Biochemical Ecology:

<http://www.scribd.com/doc/63711272>;

Indexed in Web of Science.

**

63.

Title: Basics of the molecular-ecological mechanism of water quality formation and water self-purification

Author(s): Ostroumov S. A.

Source: CONTEMPORARY PROBLEMS OF ECOLOGY, Volume: 1, Issue: 1, Pages: 147-152 DOI: 10.1134/S1995425508010177 Published: FEB 2008;

Full text

free: <https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxvc3Ryb3Vtb3ZzZXJnZWl8Z3g6MjE4MWFkMTc4NTZhZTY2Zg>

Indexed in the Web of Science.

**

64.

This is a first publication to report a hazardous effect of a synthetic non-ionic surfactant (exemplified by Triton X-100) on a diatom algae (exemplified by a marine species, *Thalassiosira pseudonana*). In the paper, it was shown that this chemical inhibited the reproduction rate and abundance of the cells of this species of marine phytoplankton:

Title: Effects of aquatic pollution by a non-ionogenic surfactant on the marine diatom *Thalassiosira pseudonana*.

Author(s): Fisher N; MaertzWernte M; Ostroumov SA

Source: IZVESTIYA AKADEMII NAUK SERIYA BIOLOGICHESKAYA, Issue: 1, Pages: 91-95 Published: JAN-FEB 1996;

Indexed in the Web of Science.

**

65.

This is a first publication to report both inhibitory and stimulation effects of a synthetic surfactant on two unique strains of the ocean species of cyanobacteria *Synechococcus* from the collection of WHOI. These data demonstrated a new hazard of an imbalance of species composition of marine phytoplankton under the effect of pollution by synthetic chemical pollutants.

The non-ionogenic surfactant Triton X-100 acted differently on cyanobacteria *Synechococcus* WH 7805 and WH 8103: 5 mg/liter of the surfactant inhibited strain 7805 and favored the development of strain 8103. A lower concentration (0.5 mg/liter) stimulated the growth of both strains. Triton X-100 produced no effect on the motility of strain 8103 cells.

Title: EFFECT OF NONIONOGENIC SURFACTANT ON CYANOBACTERIA

Author(s): WATERBURY J.; OSTROUMOV S.A.

Source: MICROBIOLOGY, Volume: 63, Issue: 2, Pages: 140-142, Published: MAR-APR 1994

ISSN: 0026-2617; at the site: <http://bibapp.mbl.edu/works/416>

， 生态系统 生态系统的健康， 水的净化， ποιότητα των υδάτων, ρύπανση των υδάτων, ρύπων, υδάτινων πόρων, υδατική οικολογία, οικοσυστήματα η υγεία των οικοσυστημάτων, καθαρισμού του νερού, kwaliteit van het water, waterverontreiniging, stoffen, watervoorraden, aquatische ecologie, ecosystemen de gezondheid van ecosystemen, waterzuivering, la calidad del agua, la contaminación del agua, contaminantes, los recursos hídricos, ecología acuática, los ecosistemas la salud de los ecosistemas, de purificación de agua, Wasserqualität, Wasserverschmutzung, Schadstoffe, Wasserressourcen, Aquatische, Ökologie, Ökosysteme, die Gesundheit der Ökosysteme, Wasserreinigung, загрязнение воды, поллютанты, водные ресурсы, водная экология, экосистемы, здоровье экосистем, очищение воды, S.A.Ostroumov, С.А.Остроумов, качество воды, qualité de l'eau, pollution de l'eau, polluants, ressources en eau, l'écologie aquatique, les écosystèmes la santé des écosystèmes, purification de l'eau,