



The General Laws of Chemical Elements Composition Dynamics in the Biosphere

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The key point of investigation of the specificity of the biosphere elemental composition formation is determination of patterns of redistribution of elemental average concentrations among various phases, like solid - liquid (the lithosphere – the hydrosphere), which occurs as a result of a global continuous processing of inert matter by living substances. Our task here is to investigate this process in the system “lithosphere – hydrosphere” in view of the integrated involvement of living material in it. This process is most active in biogeochemical barriers, i.e. in places of “the life condensation” and runs under a nonlinear regularity that has been unknown before.

It is established that this process results in a general relative increase in concentrations of chemical elements in the solid phase in proportion as their prevalence in the environment is reduced. This process running in various natural systems has practically the same parameter of nonlinearity (v) approximately equal to 0.7. For proto-lithosphere –“living material” – soil $v = 0.75$. For river – “living material” – ocean $v = 0.67$. For the contemporary factual awareness level these estimations of nonlinearity indices are practically negligible. Hence, it is for the first time that the existence of a universal constant of nonlinearity of elemental composition evolution in the biosphere has been proved and its quantitative evaluation has been made.

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