

Development of Speciation Methods for Trace Elements in the Environmental and Health Sciences

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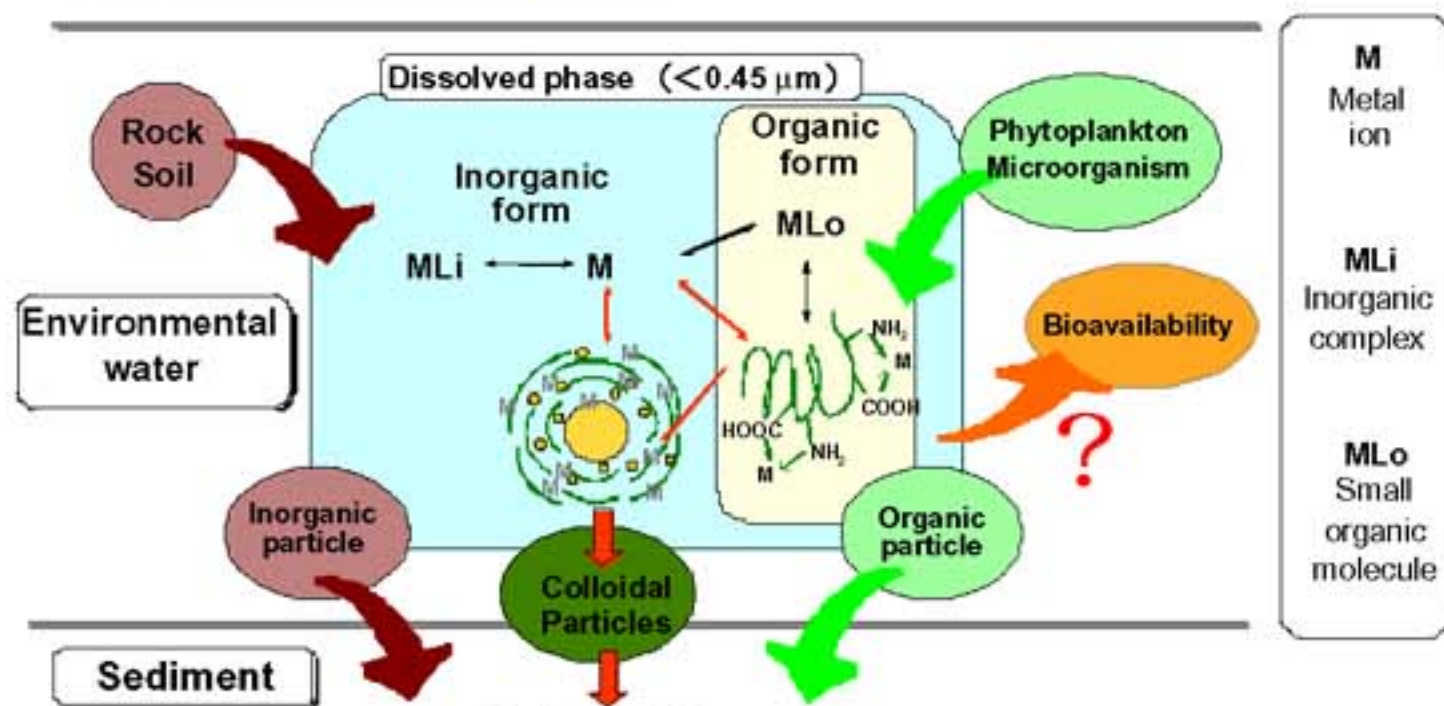
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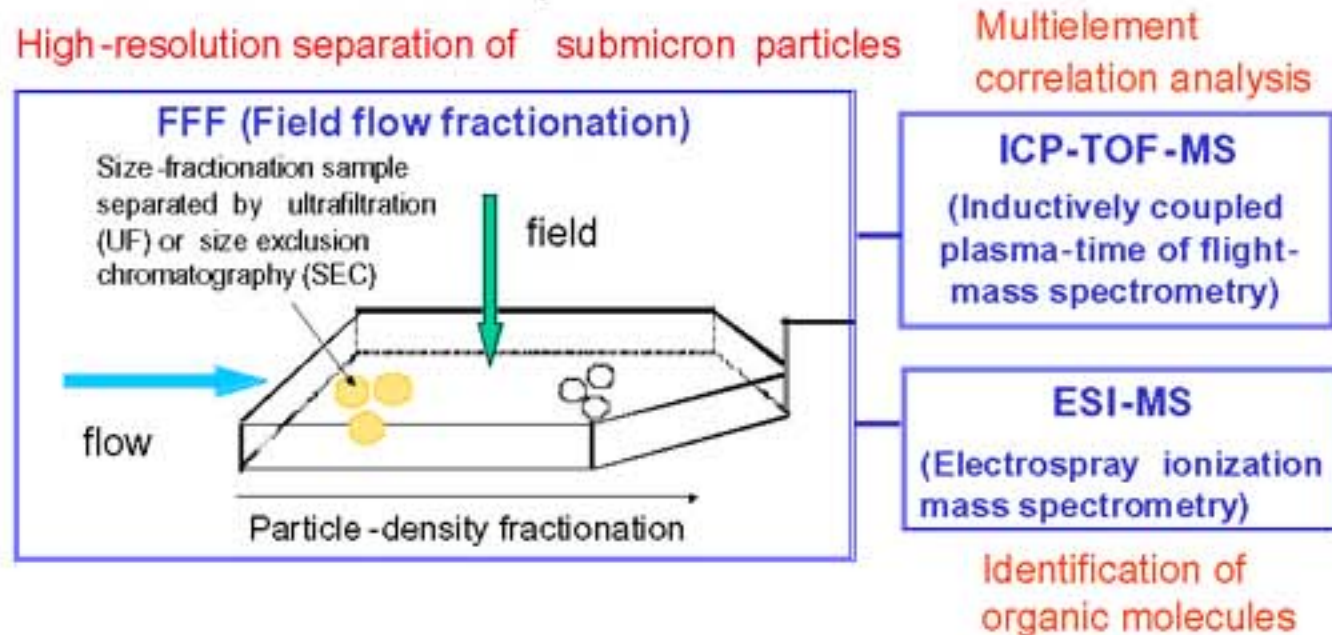
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(I) Development of Speciation Method for Submicron Particles in Natural Water Based on High-resolution Multifunctional Detection

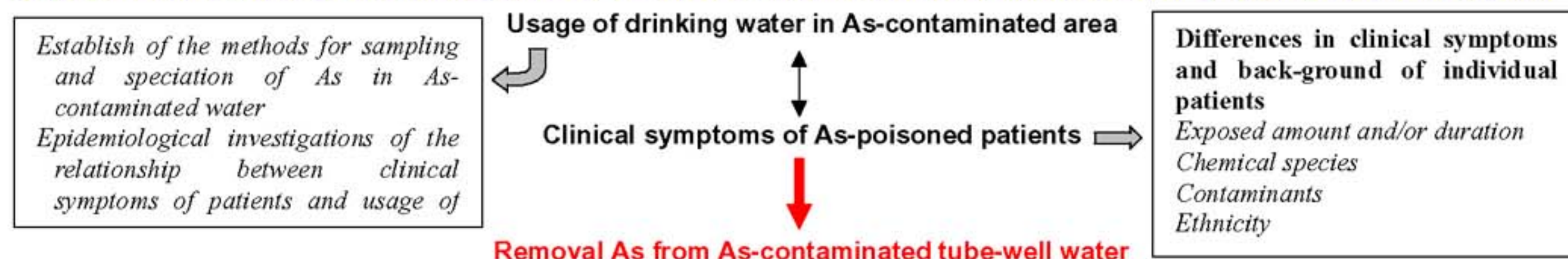


Kinetic of trace metals in environmental water

Submicron particles in natural water attract a great attention as the key materials to elucidate the transport of heavy metals and organic pollutants in environmental water systems. In order to predict the fates of organic and inorganic pollutants emitted from human activities, it is inevitable to understand the characteristics and behaviors of submicron particles in natural water as well as to determine their contents and size-distributions. Particularly, the investigation of their adsorption affinities to organic and inorganic pollutants and their growing processes from suspended particles to sedimentation should be one of the most important issues for speciation analysis of natural water. Thus, a new speciation method for submicron particles will be developed in this study, which is based on the field flow fluctuation method and the multielement correlation analysis.



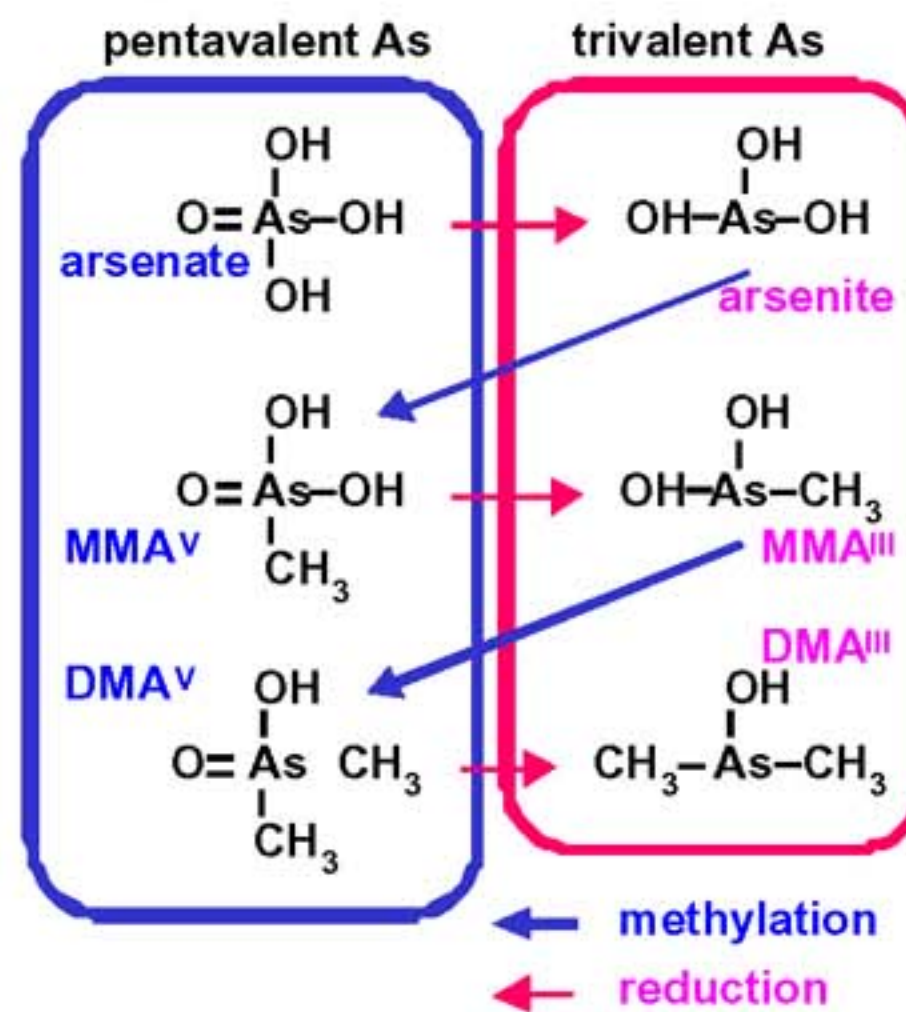
(III) Characterization of Surrounding Waters in Arsenic Contaminated Area and Evaluation of Their Biological Functions



(II) Study on Biological Functions of Trace Elements Based on Speciation: Arsenic Species and their Toxicity



Urgent study for several million patients suffering from environmental arsenic



Metabolic pathway for As in mammals

- Goal of This Theme
1. Develop the speciation method to separate and identify all arsenic metabolites in the body.
 2. Apply the above speciation study to reveal the animal species difference in the metabolism of arsenic.
 3. Develop the speciation method to separate and identify arsenics bound to proteins and other constituents in the body.
 4. Apply the above speciation study to reveal the animal species difference in the toxicity of arsenic.
 5. Finally the application of the suitable animal model to search an antidote for arsenic toxicity.