Arsenic removal from hot spring water using scoria grains

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Arsenic removal from hot spring water using scoria grains is attempted using simulated water. Z-To 5 scoria (Ban et al, 2004) that obtained Zao volcano, were prepared as adsorbent. These scoria was washed by distilled water and dried, sieved to 2-4mm granular size. The arsenic stock solution (10ppm) was prepared by diluting arsenic standard solution (1000ppm, As2O3 and NaOH in HCl, adjusted pH 5) with distilled water. Experiments are carried out varied scoria dose 0-40g/l and 10ppm arsenic solution shaking at 200rpm and 25degrees, contact time 3h and 6h. After shaking, these solutions are filtrated by 0.45micrometer membrane filter. Filtrated solutions are analyzed with ICP-MS. Maximum adsorption was about 25percent and noticed when the scoria dose was 40g/l and 6h. The more adsorbent dose increase, the more arsenic is adsorbed. No difference in contact time varied from 3h to 6h. It is important to consider effect of pH and Eh. Now we are trying to remove arsenic using pumice and varied adsorbent dose, initial concentration, contact time, pH and Eh.