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Facile Defluoridation of Drinking Water by Forming Shell@Fluorapatite Nanoarray during Boiling Egg Shell

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Highlights

- Facile defluoridation is firstly realized by boiling egg shell.
- F^- is adsorbed from water forming uniform fluorapatite nanoarray on shell.
- Acetic acid can significantly speed up the defluoridation process.
- High fluorine adsorption capacity can reach 47.9 mg/g if using egg shell powder.
- Pilot scale defluoridation is realized by boiling egg shell in the presence of phosphate and acetic acid.

Abstract

High fluoride water is one of the major problems against drinking water and are affecting millions of people all over the world. Refined adsorbents and water treatment plants aim at massive water supply but can't meet scattered household requirements, especially in the developing areas. Here, we developed a facile defluoridation method in which F^- can be removed