CLAIMS

1. A method for removing deposits from a surface comprising the steps of:

   wetting the surface in a first salt solution so that the first salt solution penetrates into the cracks or pores of the deposits;

   removing the first salt solution outside the cracks or pores of the deposits;

   drying the surface so that the first salt solution inside the cracks or pores of the deposits becomes an anhydrous salt; and

   wetting the surface in a second salt solution;

   wherein the anhydrous salt forms a salt hydrate inside the cracks or pores of the deposits and causes volume expansion, resulting in breaking the deposits from the surface.

2. The method of claim 1, wherein the first salt solution is the same as the second salt solution.
3. The method of claim 1, wherein the first salt solution is different from the second salt solution.
4. The method of claim 1, wherein the first salt solution is a saturated solution of the salt.
5. The method of claim 1, wherein the first salt solution is an unsaturated solution of the salt.
6. The method of claim 1, wherein the second salt solution is a saturated solution of the salt.
7. The method of any one of the claims 1-6, wherein the first salt solution and the second salt solution independently comprise a salt selected from the group consisting of copper(II) sulfate, zinc sulfate, calcium chloride, magnesium sulfate, iron(II) sulfate, magnesium chloride, sodium carbonate, sodium thiosulfate, barium hydroxide, iron(II) acetate, zinc nitrate, magnesium ammonium phosphate, iridium(III) bromide, sodium acetate, calcium sulfate, sodium dihydrogen phosphate, sodium sulfate, nickel(II) nitrate, iron(III) chloride, nickel(II) sulfate, manganese(II) sulfate, sodium monohydrogen phosphate, manganese(II) chloride, copper(II) nitrate, calcium nitrate, cobalt(II) chloride, nickel(II) chloride, nickel(II) sulfate, sodium dichromate, copper(II) nitrate, tin(IV) chloride, and mixtures thereof.

8. The method of claim 1, wherein the first salt solution is a solution of sodium sulfate.
9. The method of claim 8, wherein the concentration of the first salt solution is about 14%.
10. The method of claim 1, wherein the second salt solution is a solution of sodium sulfate.
11. The method of claim 10, wherein the concentration of the second salt solution is about 14%.
12. The method of claim 1, wherein the surface is dried at selected from the group consisting of about 50°C, about 55°C, about 60°C, about 65°C, about 70°C, about 75°C, about 80°C, about 85°C, about 90°C, about 95°C, about 100°C, about 100°C, about 120°C, about 125°C, about 130°C, about 135°C, about 140°C, about 150°C, about 155°C, about 160°C, about 165°C, about 170°C, about 175°C, about 180°C, about 185°C, about 190°C, about 195°C, and about 200°C.
13. The method of claim 1, wherein the surface is dried by vacuum drying.
14. The method of claim 13, where the vacuum drying is conducted in a vacuum selected from the group consisting of about 1 Torr, about 10 Torr, about 25 Torr, about 50 Torr, about 75 Torr, about 100 Torr, about 125 Torr, about 150 Torr, about 175 Torr, about 200 Torr, about 225 Torr, about 250 Torr, about 275 Torr, about 300 Torr, about 325 Torr, about 350 Torr, about 350 Torr, about 375 Torr, about 400 Torr, about 425 Torr, about 450 Torr, about 475 Torr, about 500 Torr, about 525 Torr, about 550 Torr, about 575 Torr, about 600 Torr, about 625 Torr, about 650 Torr, about 675 Torr, and about 700 Torr.
15. The method of claim 1, wherein the salt hydrate is selected from the group consisting of copper(II) sulfate pentahydrate, zinc sulfate heptahydrate, calcium chloride dihydrate, magnesium sulfate heptahydrate, iron(II) sulfate heptahydrate, magnesium chloride hexahydrate, sodium carbonate decahydrate, sodium thiosulfate pentahydrate, barium hydroxide octahydrate, iron(II) acetate tetrahydrate, zinc nitrate hexahydrate, magnesium ammonium phosphate hexahydrate, iridium(III) bromide tetrahydrate, sodium acetate trihydrate, calcium sulfate dihydrate, sodium dihydrogen phosphate heptahydrate, sodium sulfate decahydrate, nickel(II) nitrate hexahydrate, iron(III) chloride hexahydrate, nickel(II) sulfate hexahydrate, manganese(II) sulfate monohydrate, sodium monohydrogen phosphate heptahydrate, manganese(II) chloride tetrahydrate, copper(II) nitrate hexahydrate, calcium nitrate tetrahydrate, cobalt(II) chloride hexahydrate, nickel(II) chloride hexahydrate, nickel(II) sulfate tetrahydrate,

sodium dichromate dihydrate, copper(II) nitrate trihydrate, tin(IV) chloride pentahydrate, and mixtures thereof.

16. The method of claim 1, wherein the anhydrous salt comprises a salt selected from the group consisting of copper(II) sulfate, zinc sulfate, calcium chloride, magnesium sulfate, iron(II) sulfate, magnesium chloride, sodium carbonate, sodium thiosulfate, barium hydroxide, iron(II) acetate, zinc nitrate, magnesium ammonium phosphate, iridium(III) bromide, sodium acetate, calcium sulfate, sodium dihydrogen phosphate, sodium sulfate, nickel(II) nitrate, iron(III) chloride, nickel(II) sulfate, manganese(II) sulfate, sodium monohydrogen phosphate, manganese(II) chloride, copper(II) nitrate, calcium nitrate, cobalt(II) chloride, nickel(II) chloride, nickel(II) sulfate, sodium dichromate, copper(II) nitrate, tin(IV) chloride, and mixtures thereof.
17. The method of claim 1, wherein the salt hydrate is in a crystalline form.
18. The method of claim 1, wherein the volume expansion is at least about 2 times.
19. The method of claim 1, wherein the concentration of the first salt solution is about 5%, about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, 55%, about 60%, about 65%, about 70%, or about 75% by the weight of the salt.
20. The method of claim 19, wherein the concentration of the second salt solution is about 5%, about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, 55%, about 60%, about 65%, about 70%, or about 75% by the weight of the salt.