Chemical Casserole

Purpose

To show different types of reactions (precipitation reaction and complex ion formation)

Materials

6 beakers	17M NH_4OH
1M $AgNO_3$	1M KBr
0.1M NaOH	1M $Na_2S_2O_3$
1M NaCl	1M KI

Procedure

1) Mix 5mL 1M AgNO3 and 20mL H2O
2) Fill each beaker with one of the following solution of the given volume:
    a. 10mL of 1M KI
    b. 10mL of 0.1M NaOH
    c. 10mL of 1M NaCl
    d. 15mL of 17m NH_4OH
    e. 10mL of 1M KBr
    f. 20mL of 1M $Na_2S_2O_3$
3) Add just enough of the $AgNO_3$ solution into each beaker as to allow reactions to occur. Solutions should be mixed in the following order:
    a. 10mL 0.1M NaOH → AgOH (brown)
    b. 10mL 1M NaCl → AgCl (white)
    c. 15mL 17m NH_4OH → $Ag(NH_3)_2^+$ (clear)
    d. 10mL 1M KBr → AgBr (off-white)
    e. 20mL 1M $Na_2S_2O_3$ → $Ag(S_2O_3)_2^{3-}$ (clear)
    f. 10mL 1M KI → AgI (yellow)

Additional Information

1) Possible reactions can involve cyanide and sulfide ions however CN- is too hazardous and S2- is too smelly

2) At any point, the demonstration may be stopped and equilibrium constants used to explain an observation or to predict an upcoming change
3) Just enough solution can be added at each point to create or dissolve the precipitate

Disposal

Solutions should be placed in properly labeled waste containers with UI# 100963.