Answer on Question #55832 - Chemistry - Inorganic Chemistry

Question:

Can I use Zn to reduce Sodium Nitrate to Sodium Nitrite?

Answer:

Absolutely not:

$Zn + NaNO_3 \neq$ - this reaction does not occur

Moreover, you needn't this at all, you just need a decomposition reaction:

$NaNO_3$ (sodium nitrate) = $NaNO_2$ (sodium nitrite) $+O_2\uparrow$

You also can use zinc for getting sodium zincate

$NaNO_3 + 4\ Zn + 7\ NaOH = NH_3 + 4\ Na_2ZnO_2$ (sodium zincate) $+ 2\ H_2O$

On the other hand, you can do some other chemical transformations.

For example:

1) $Zn + 2N_2O_4 = Zn(NO_3)_2 = 2NO\uparrow$
2) $2Zn(NO_3)_2 = 2ZnO + 4NO_2\uparrow + O_2\uparrow$
3) $NO + NO_2 + 2NaOH = 2NaNO_2 + H_2O$.

Alternatively:

1) $Cu(NO_3)_2 + 2Zn = Cu + 2ZnNO_3$
2) $2Zn(NO_3)_2 = 2ZnO + 4NO_2\uparrow + O_2\uparrow$
3) $NO + NO_2 + 2NaOH = 2NaNO_2 + H_2O$.