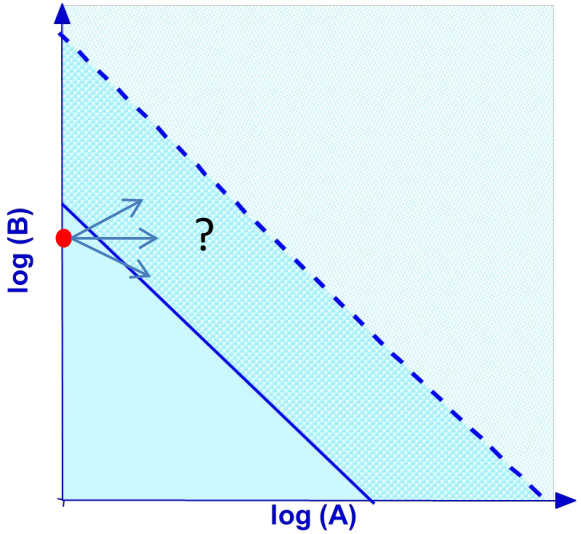
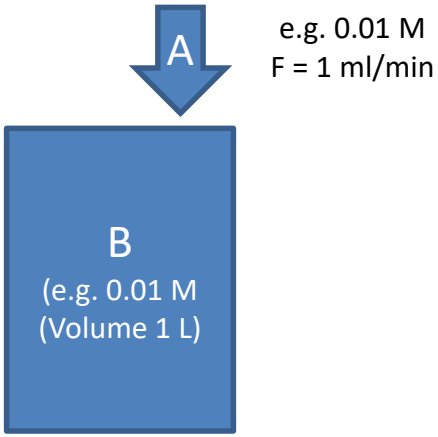
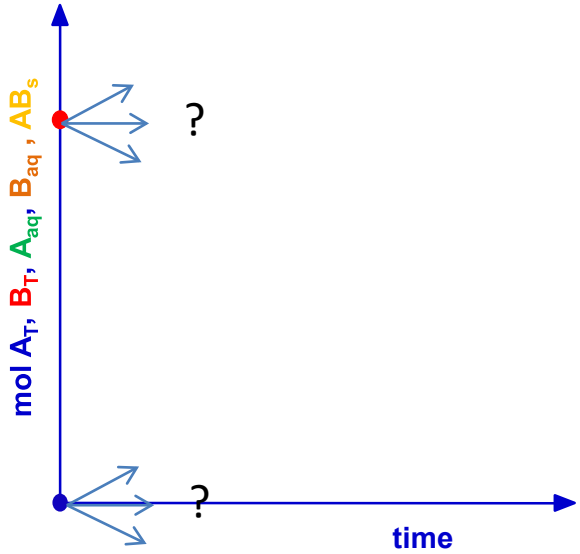
$A_{aq} + B_{aq} \leftrightarrows AB_S$ $Ba^{2+} + SO_4^{2-} \leftrightarrows BaSO4$

Conc [mol/L]
(A_{aq} and B_{aq})





mol



Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

Mass balance:

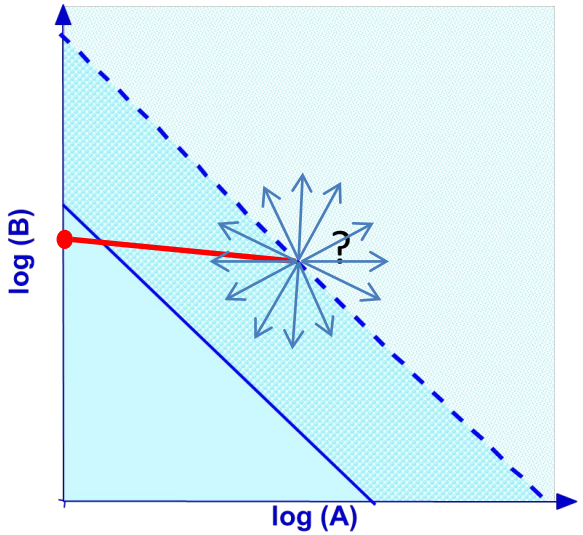
$A_{tot} = A_{aq} + AB_S$

$B_{tot} = B_{aq} + AB_S$

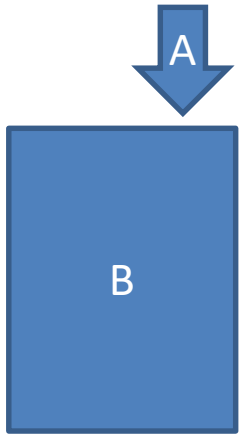
In the presence of solid:

$A_{aq} \times B_{aq} = Ksp_{AB}$

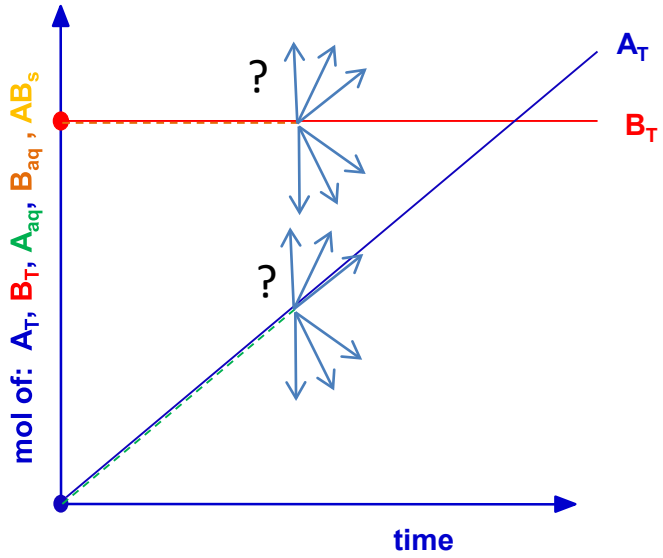
Conc [mol/L]
(A_{aq} and B_{aq})



$A_{aq} + B_{aq} \leftrightarrows AB_S$



Molar amount



Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

Mass balance:

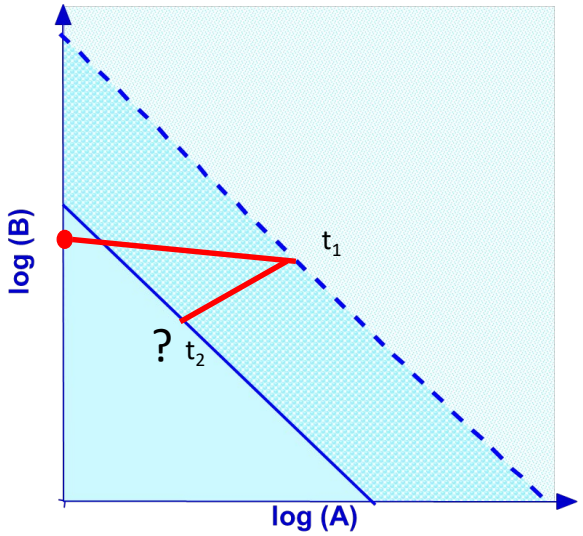
$A_{tot} = A_{aq} + AB_S$

$B_{tot} = B_{aq} + AB_S$

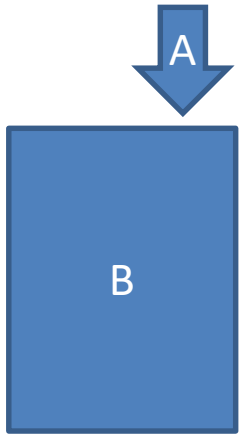
In the presence of solid:

$A_{aq} \times B_{aq} = Ksp_{AB}$

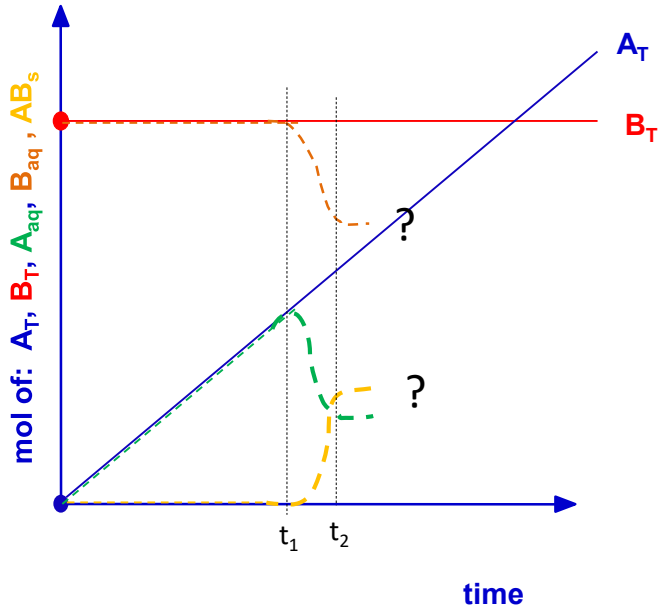
Conc [mol/L]
(A_{aq} and B_{aq})



$A_{aq} + B_{aq} \leftrightarrows AB_S$



Molar amount



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One solid species: AB_s

Mass balance:

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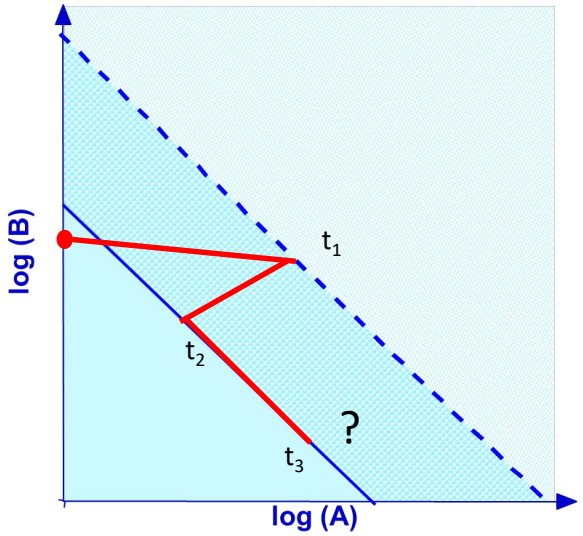
$B_{tot} = B_{aq} + AB_S$

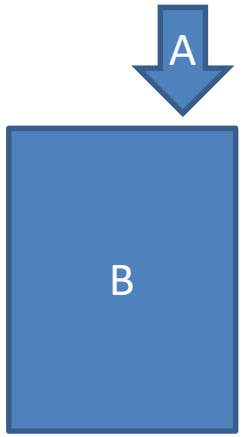
In the presence of solid:

$A_{aq} \times B_{aq} = Ksp_{AB}$

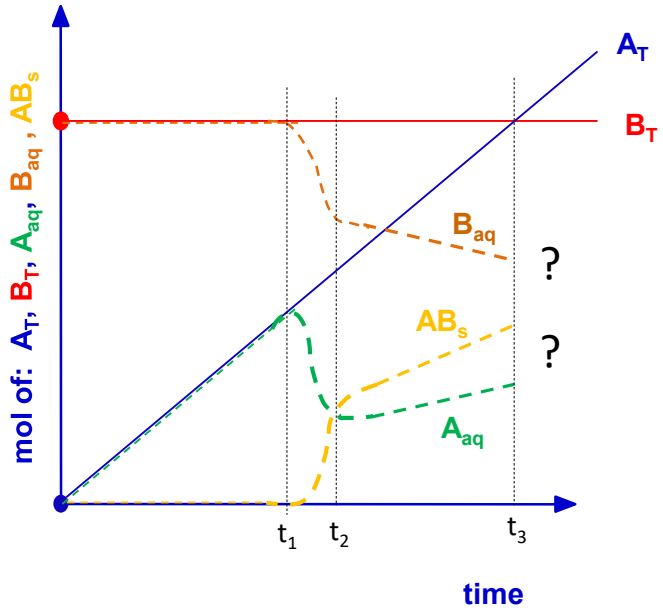
Conc [mol/L]
(A_{aq} and B_{aq})



$A_{aq} + B_{aq} \leftrightarrows AB_S$



Molar amount

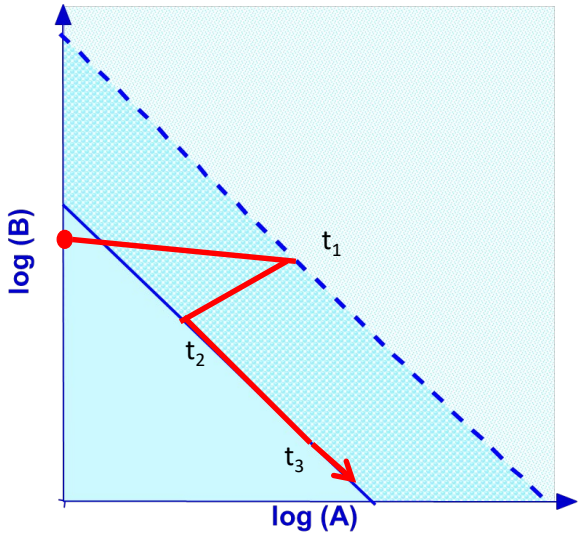


Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

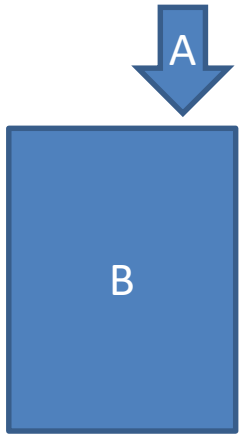
Mass balance:
$A_{tot} = A_{aq} + AB_S$
$B_{tot} = B_{aq} + AB_S$

In the presence of solid:
$A_{aq} \times B_{aq} = Ksp_{AB}$

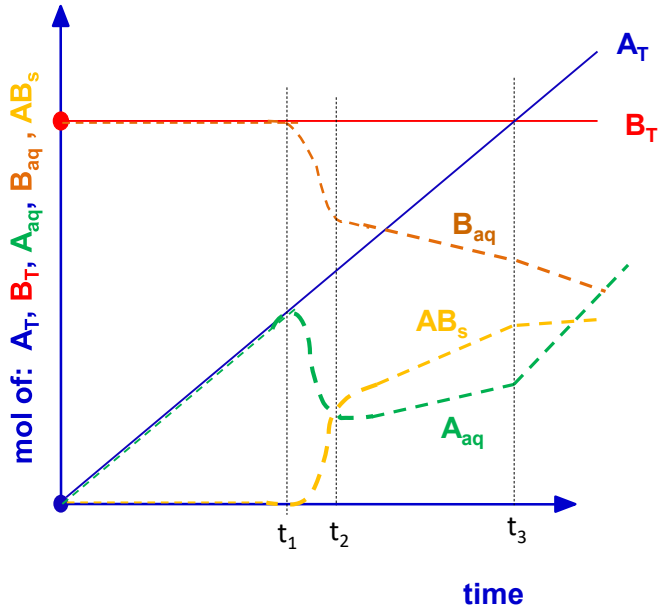
Conc [mol/L]
(A_{aq} and B_{aq})



$A_{aq} + B_{aq} \leftrightarrows AB_S$



Molar amount

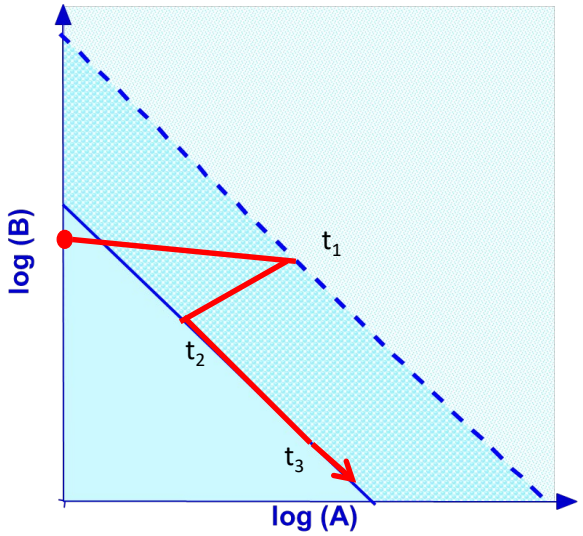


Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

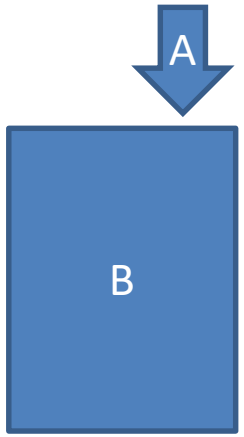
Mass balance:
$A_{tot} = A_{aq} + AB_S$
$B_{tot} = B_{aq} + AB_S$

In the presence of solid:
$A_{aq} \times B_{aq} = Ksp_{AB}$

Conc [mol/L]
(A_{aq} and B_{aq})



$A_{aq} + B_{aq} \leftrightarrows AB_S$



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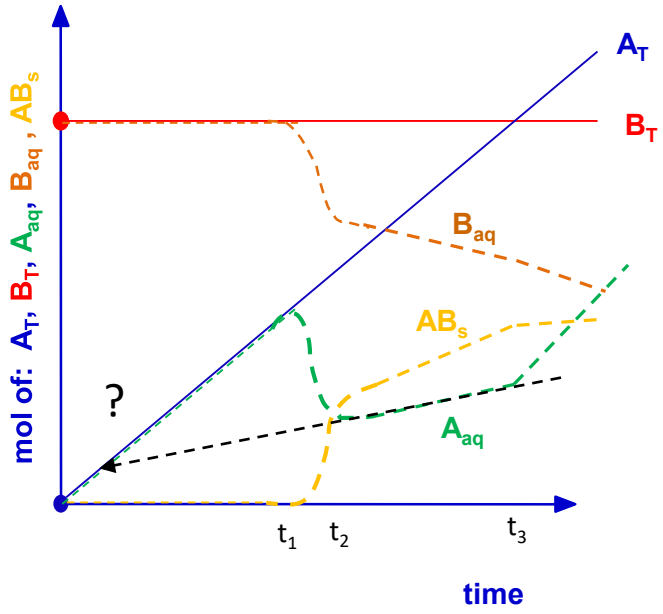
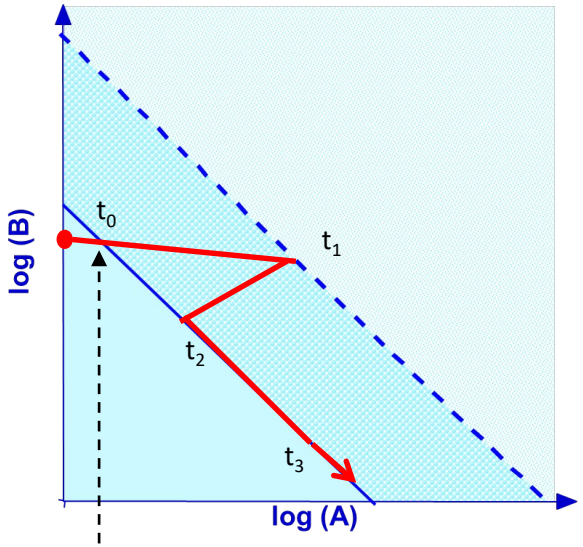


Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

Mass balance:
$A_{tot} = A_{aq} + AB_S$
$B_{tot} = B_{aq} + AB_S$

In the presence of solid:
$A_{aq} \times B_{aq} = Ksp_{AB}$

Conc [mol/L]
(A_{aq} and B_{aq})



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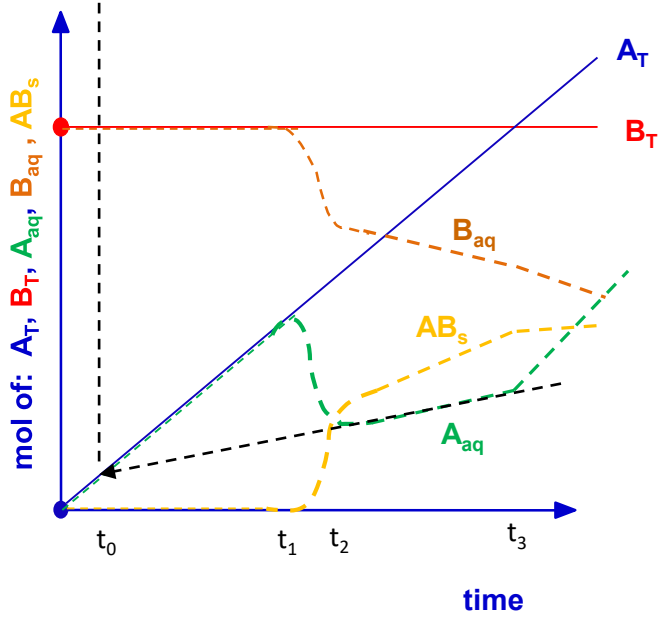
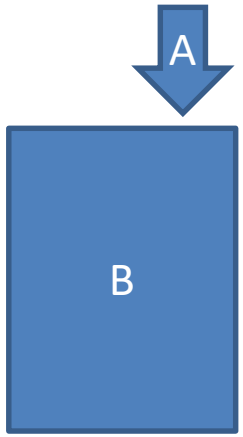


$A_{aq}+B_{aq} \leftrightarrows AB_S$



Two chemical species: A_{aq} and B_{aq}
One solid species: AB_s

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In the presence of solid:
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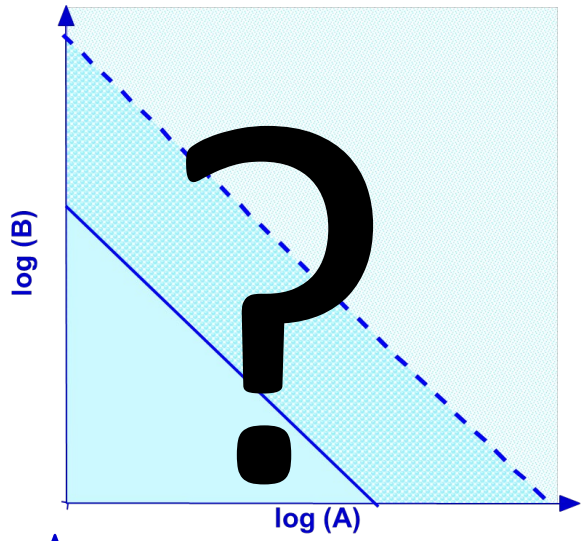
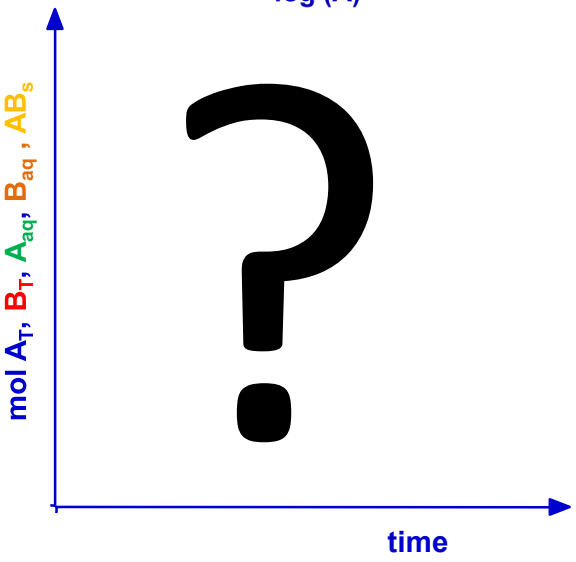
Conc [mol/L]
(A_{aq} and B_{aq})





What does it happen if we change:

- Conc of B;
- Conc of A;
- pH (in case of speciation);
- Temperature;
- Flow rate of A;
- Volume of B;
- Material of the reactor
- Stirring speed;
- If we stop A at e certain point in time;
- Operator…

Even if the chemicals are defined (A and B), every change may defines new precipitation pathway. Thus, a different solid may be obtained.
Different means: size (&PSD), shape, stoichiometry, phase, amount, powder in suspension or on the reactor wall, …