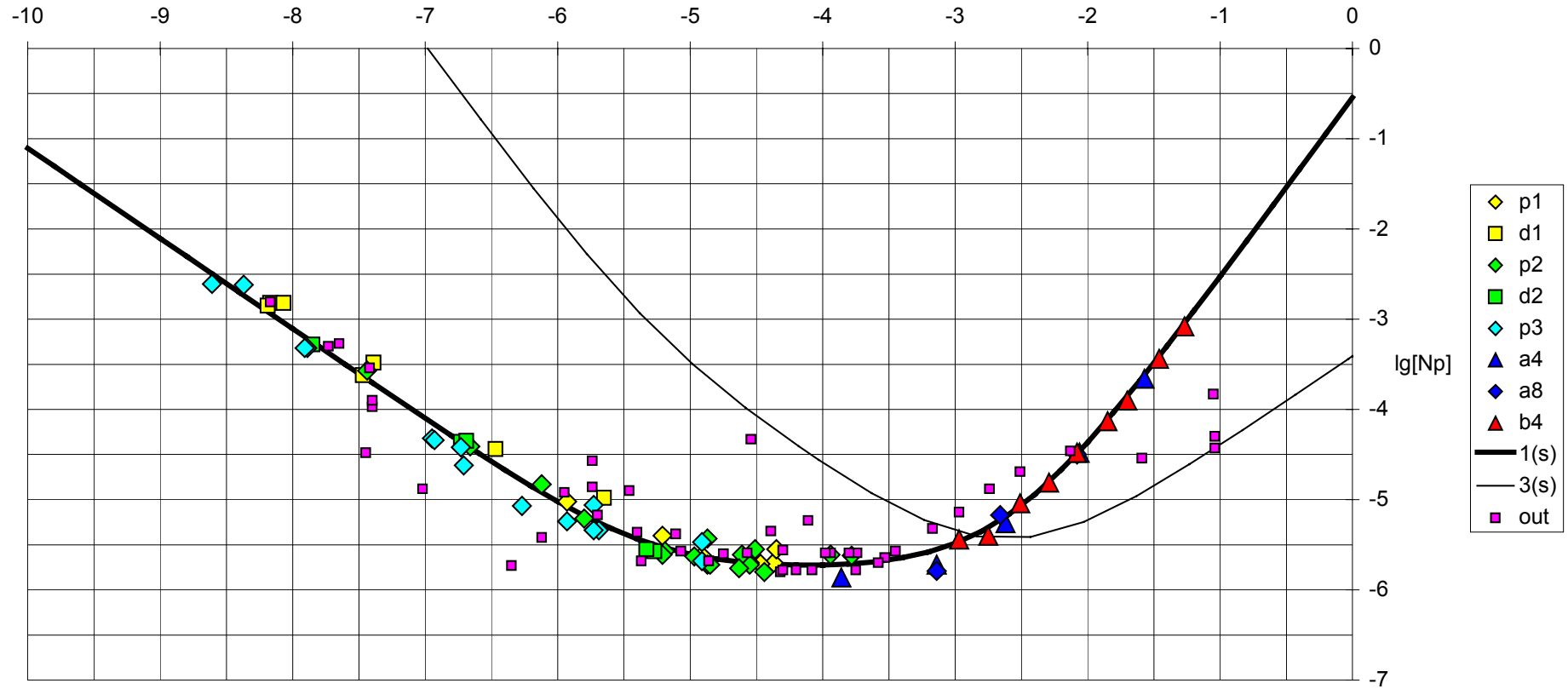Figures: pierre.vitorge(at)cea.fr
Treatment of Np(V) solubility measurements
in carbonate / bicarbonate media.
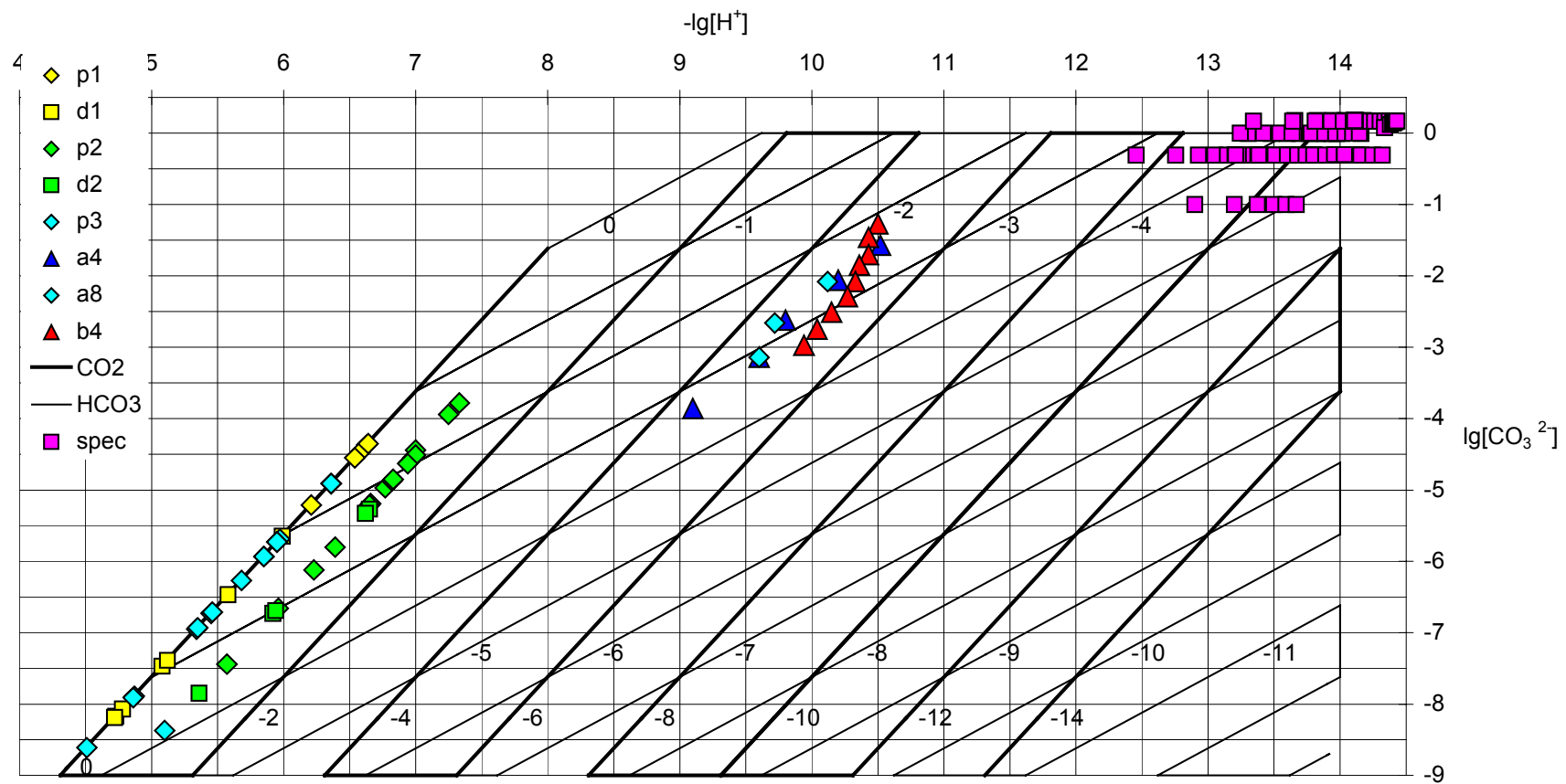# Room temperature (21°C), 3 M $NaClO_4$ aqueous solutions.
$CO_2(g)$ bubbling in HCO_3^- aqueous solution,
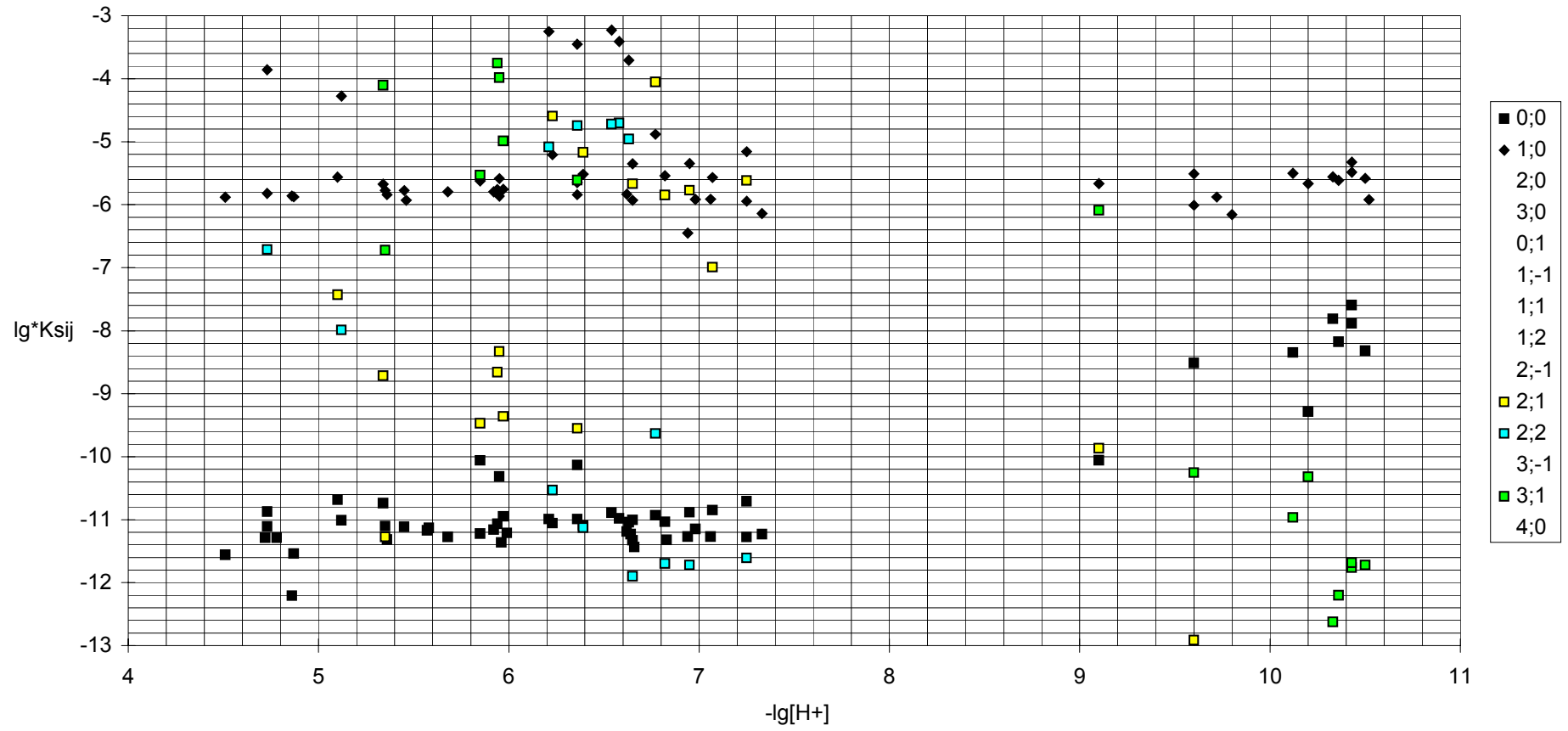# or bicarbonate or carbonate batches.
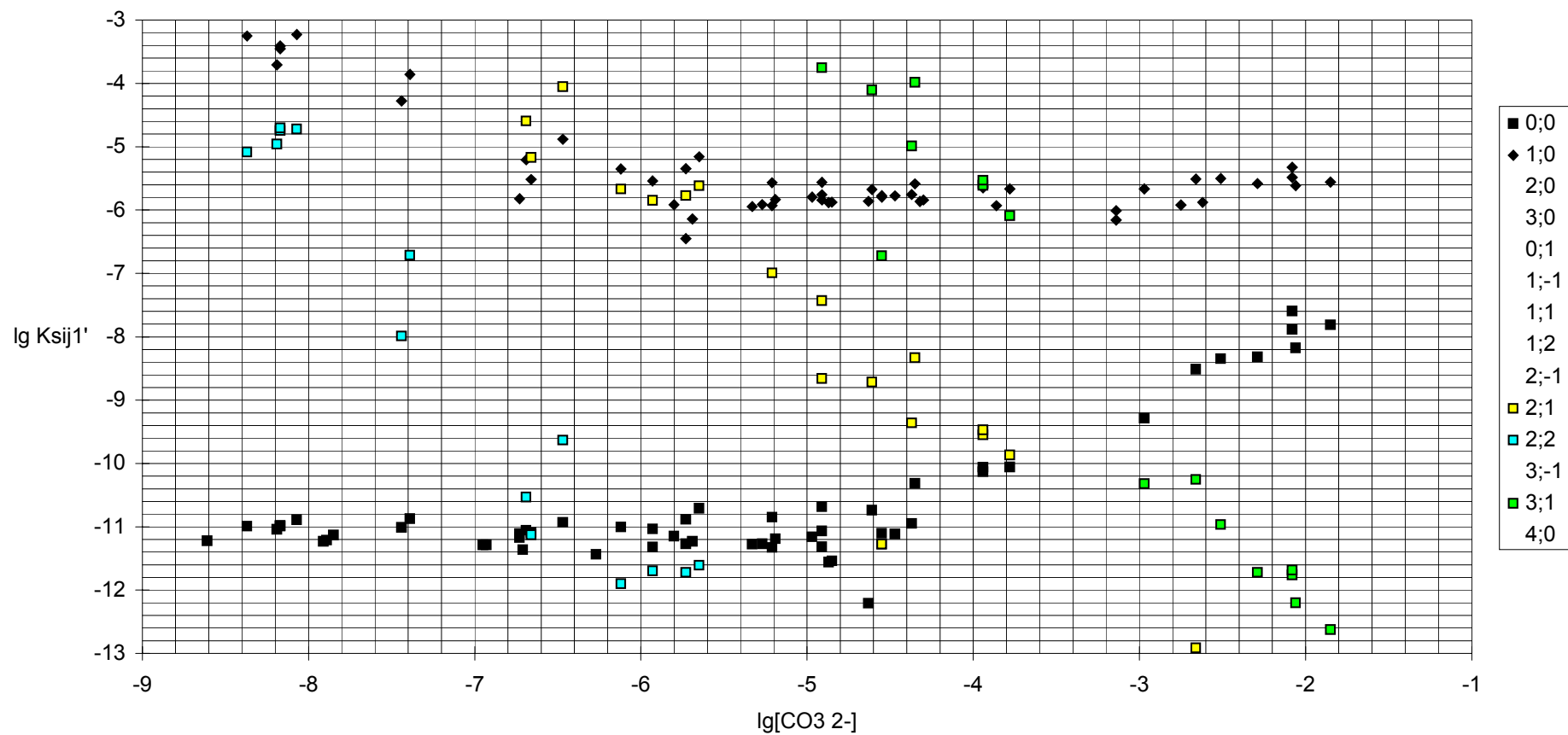
NaNpO$_2$CO$_3$ solubility

Experimental domain for Np(V) solublity measurements

lg*Ksij results versus lg[H+]

Legend:
- 0;0
- 1;0
- 2;0
- 3;0
- 0;1
- 1;-1
- 1;1
- 1;2
- 2;-1
- 2;1
- 2;2
- 3;-1
- 3;1
- 4;0

y-axis: lg*Ksij

x-axis: -lg[H+]

Ksij1' [CO3] dependency

lg Ksij1'

lg[CO3 2-]

Legend:
- ■ 0;0
- ♦ 1;0
- 2;0
- 3;0
- 0;1
- 1;-1
- 1;1
- 1;2
- 2;-1
- ■ 2;1 (yellow)
- ■ 2;2 (cyan)
- 3;-1
- ■ 3;1 (green)
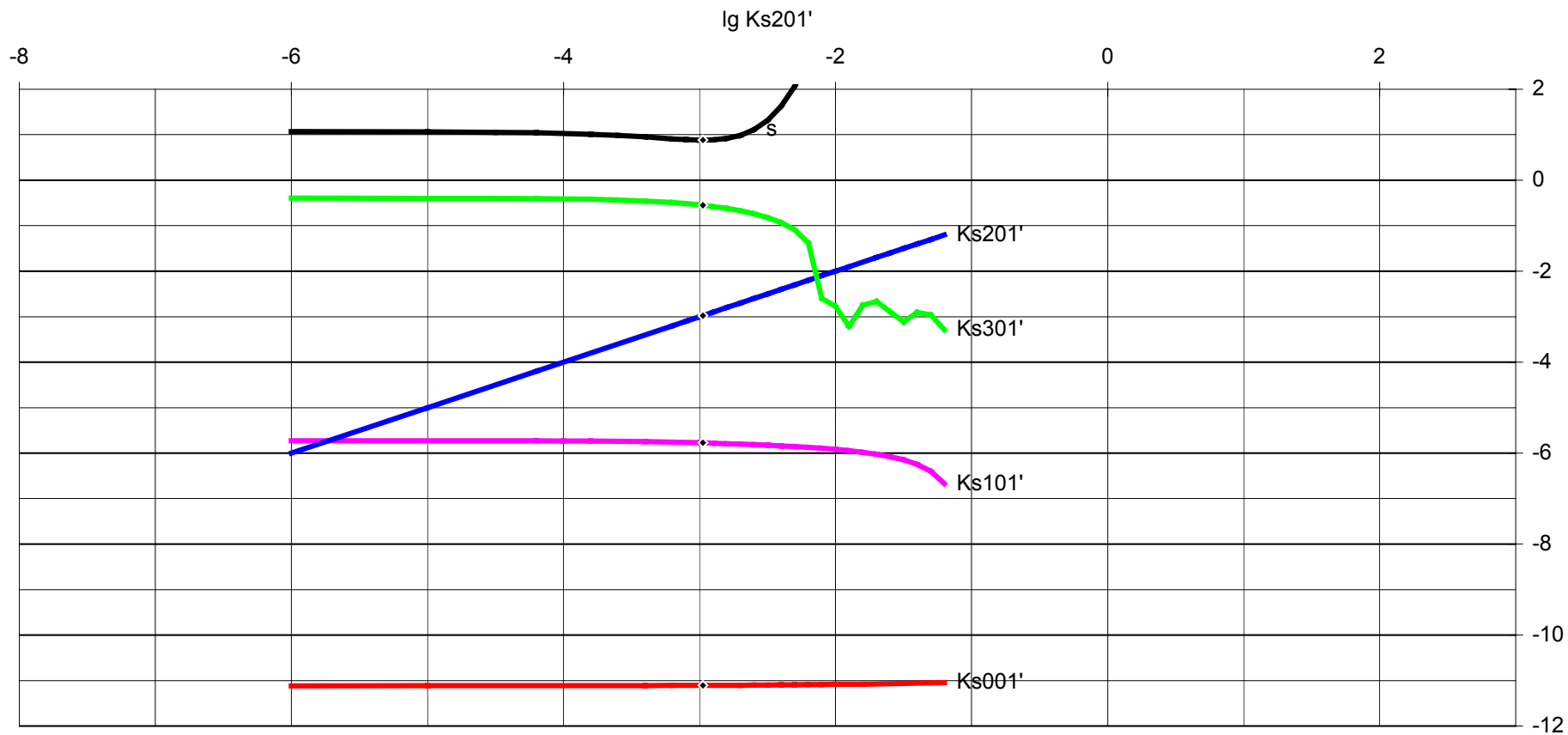- 4;0

NaNpO2CO3 solubility
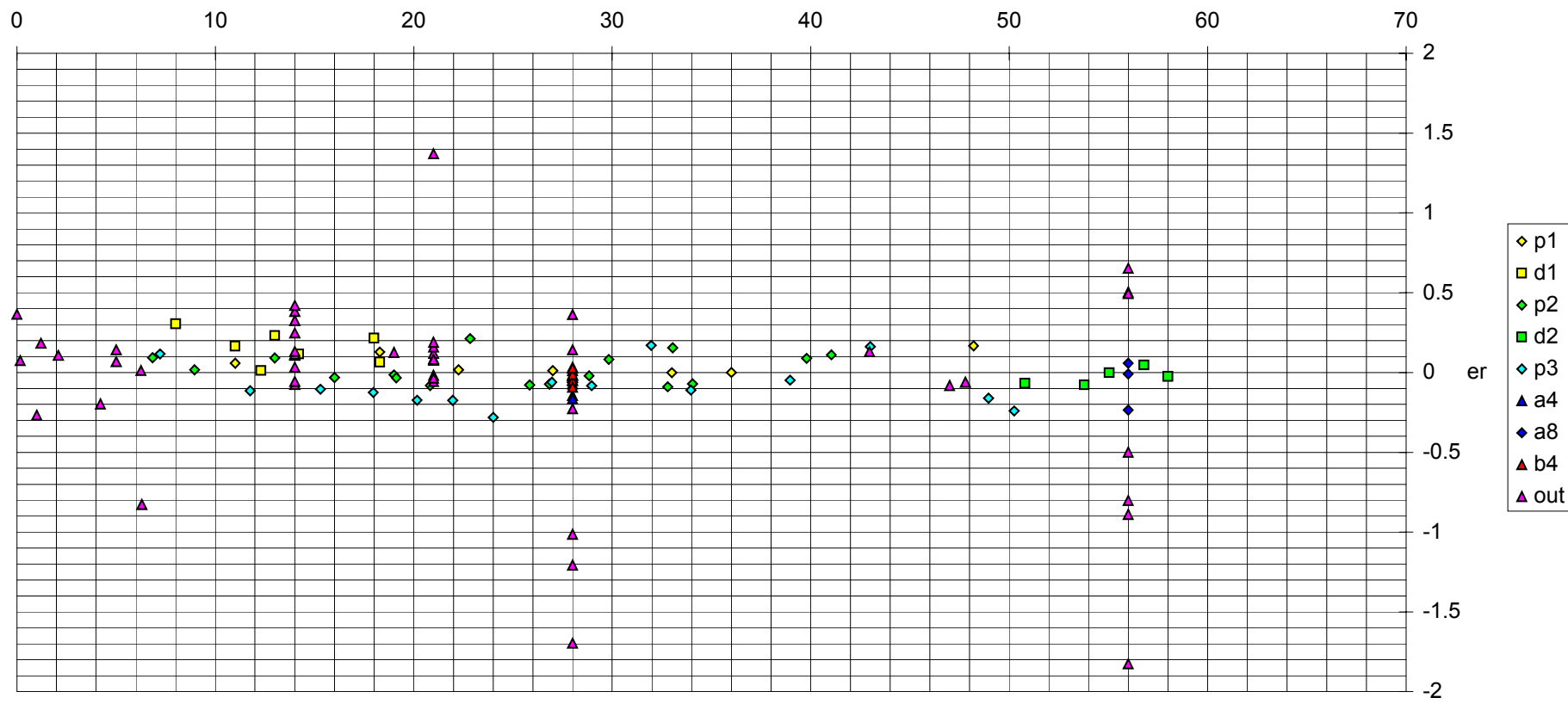
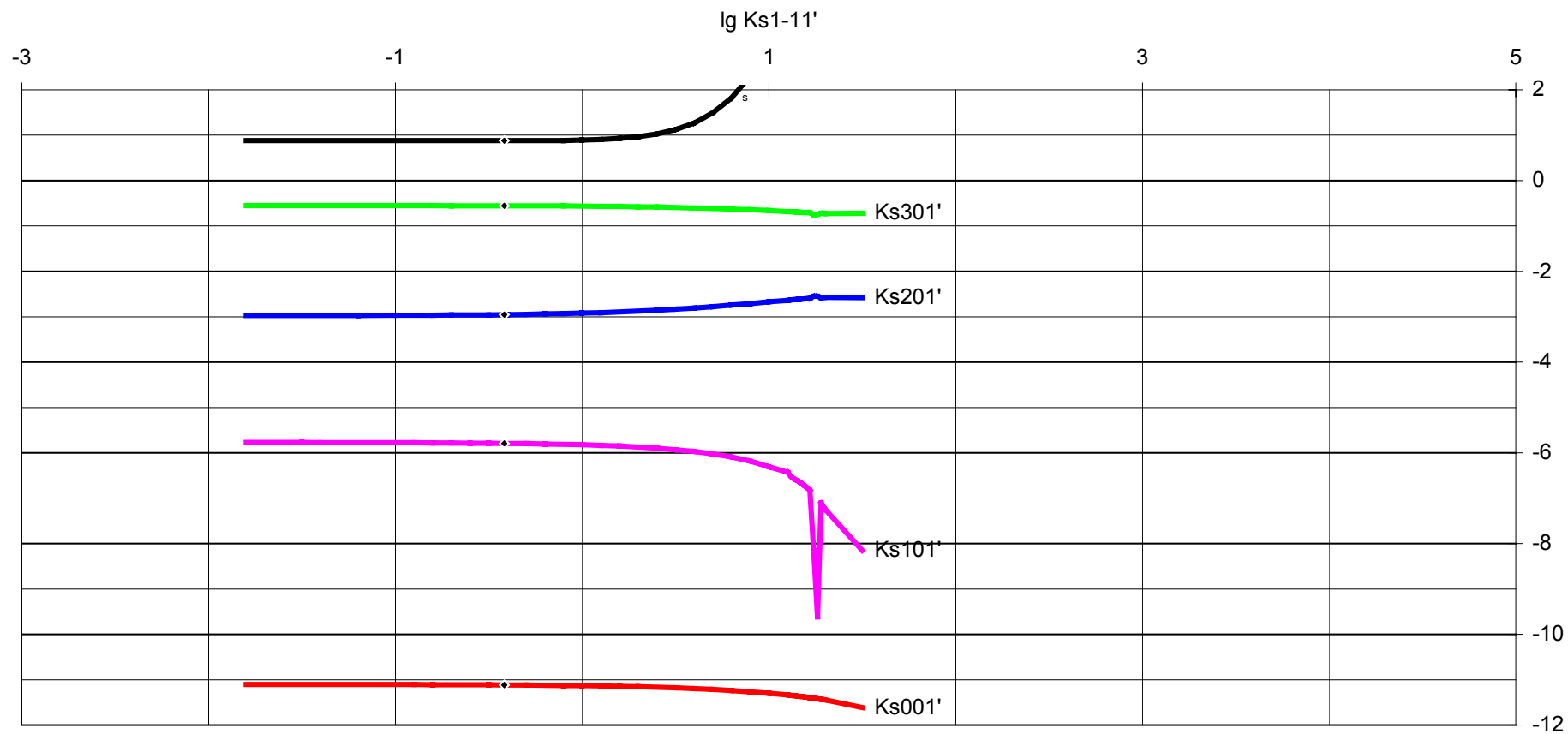# NpO2CO3- formation constant dependency of curve fitting results

lg Ks101'
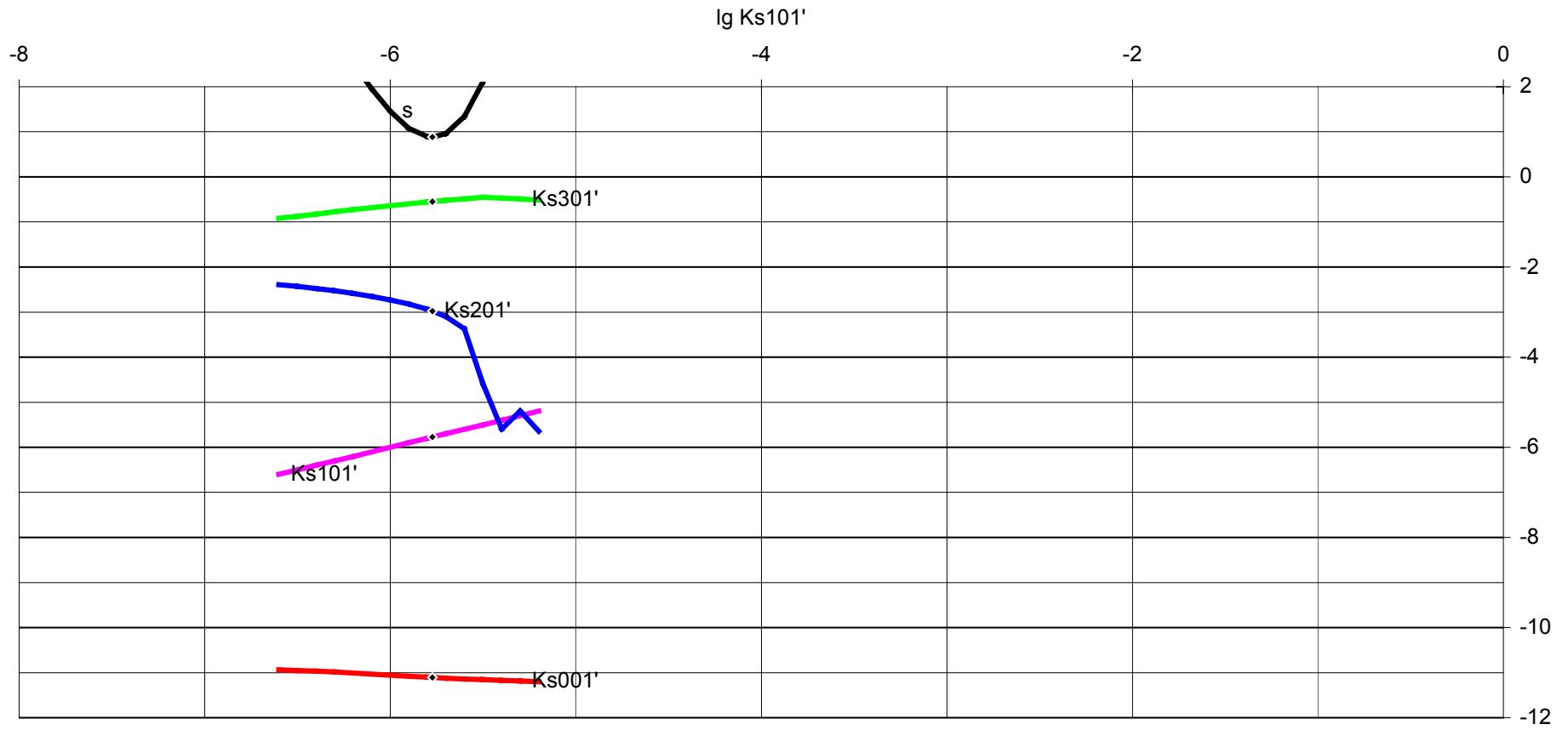
NpO2(CO3)2 3- formation constant dependency of curve fitting results

lg Ks201'

NpO2HCO3° formation constant dependency of curve fitting results
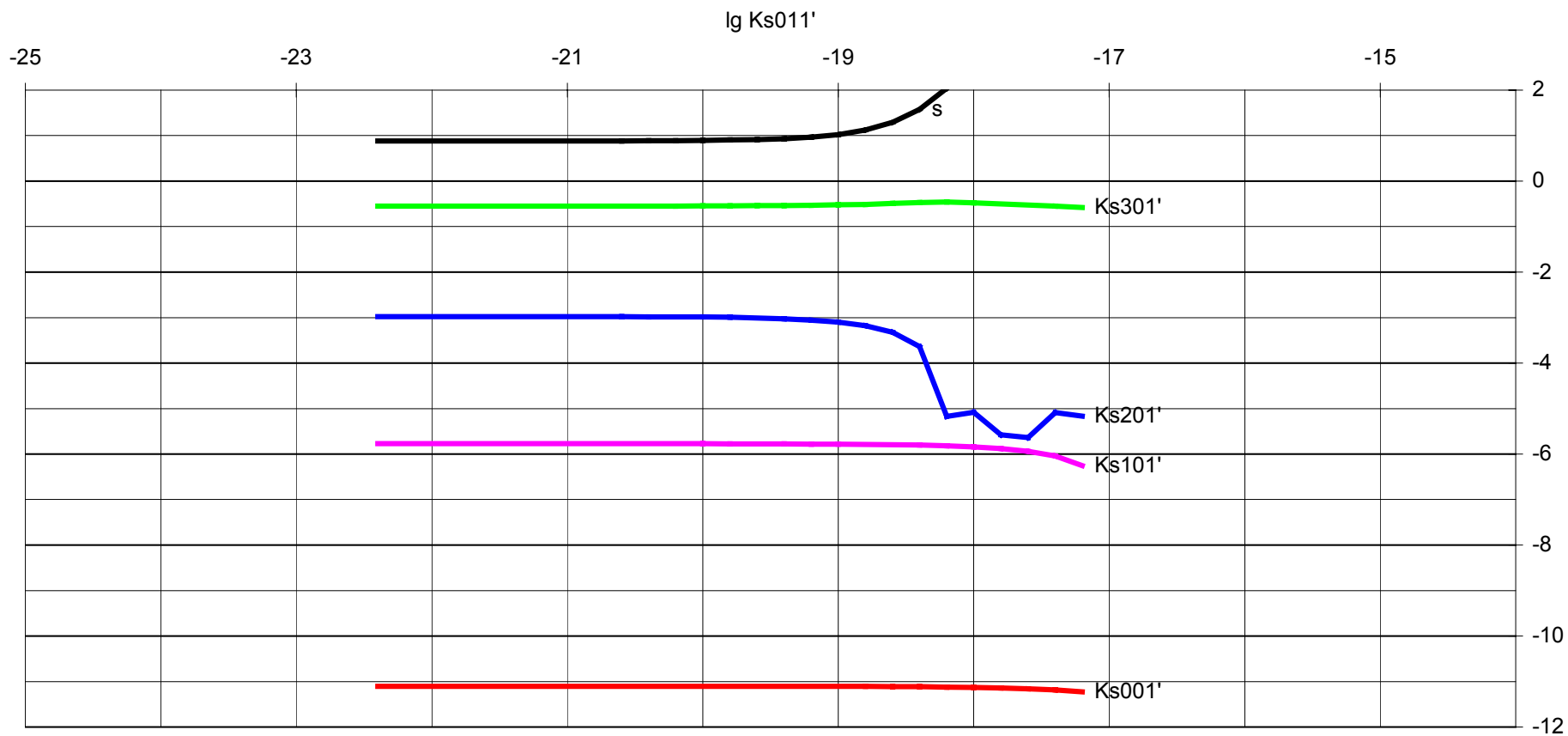
lg Ks1-11'

Ks301'

Ks201'

Ks101'

Ks001'

NpO2OH° formation constant dependency of curve fitting results (On Np(V) solublity data in HCO$_3^-$/CO$_3^{2-}$ media)

lg Ks011'

Ks301'

Ks201'

Ks101'

Ks001'

Minor species influence on the deviation error distribution.

Legend:
- ◆ no minor species
- ◆ NpO2HCO3°
- ◆ NpO2CO3HCO3 2-
- ◆ NpO2(CO3)2OH 4-
- ◆ NpO2(CO3)2HCO3 4-
- ◇ 55 data
- ◇ no NpO2(CO3)2 3-

S
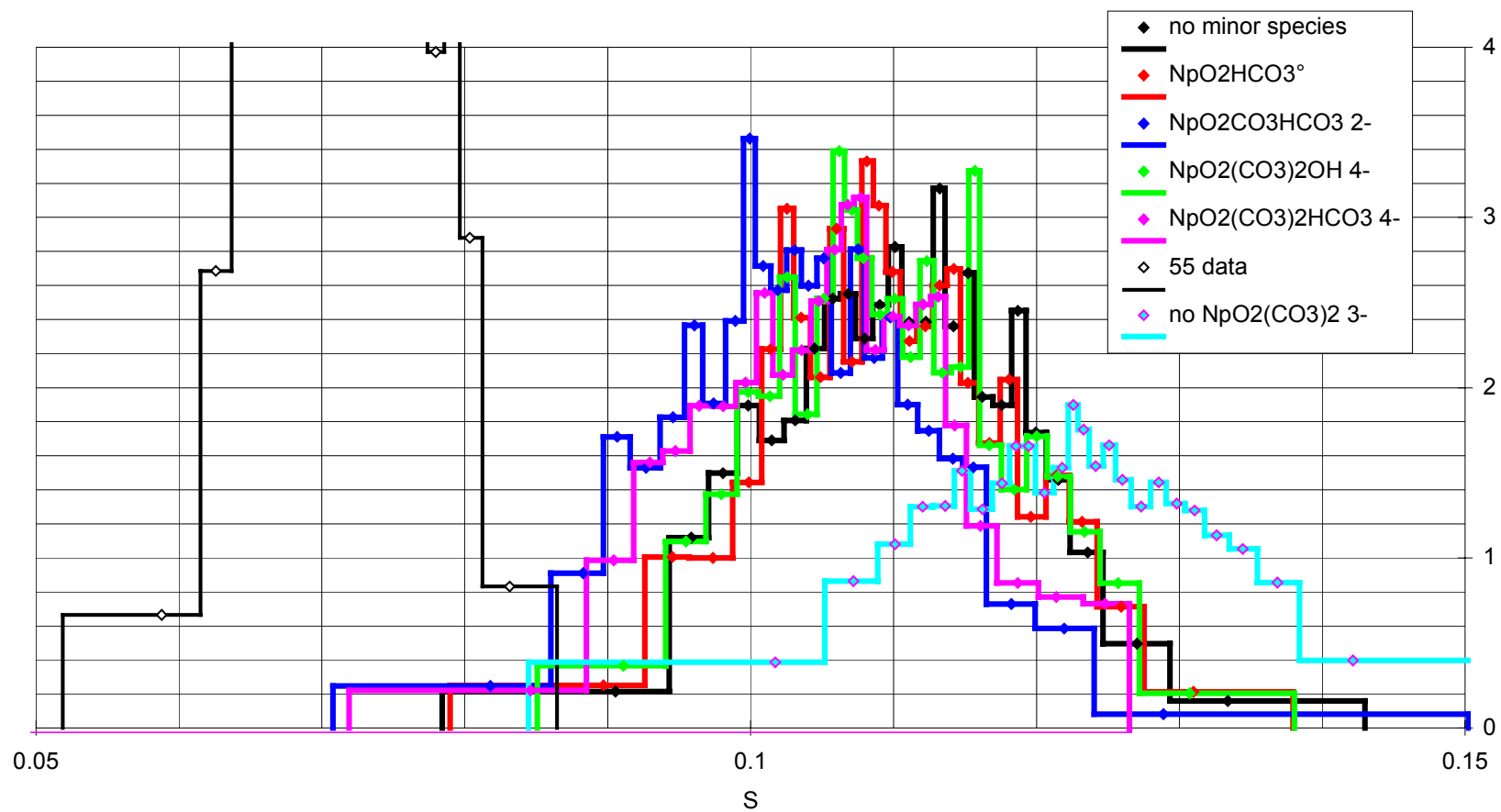
Minor species influence on the lg Ks201' error distribution (Np(V) solublity data).

lg Ks201'
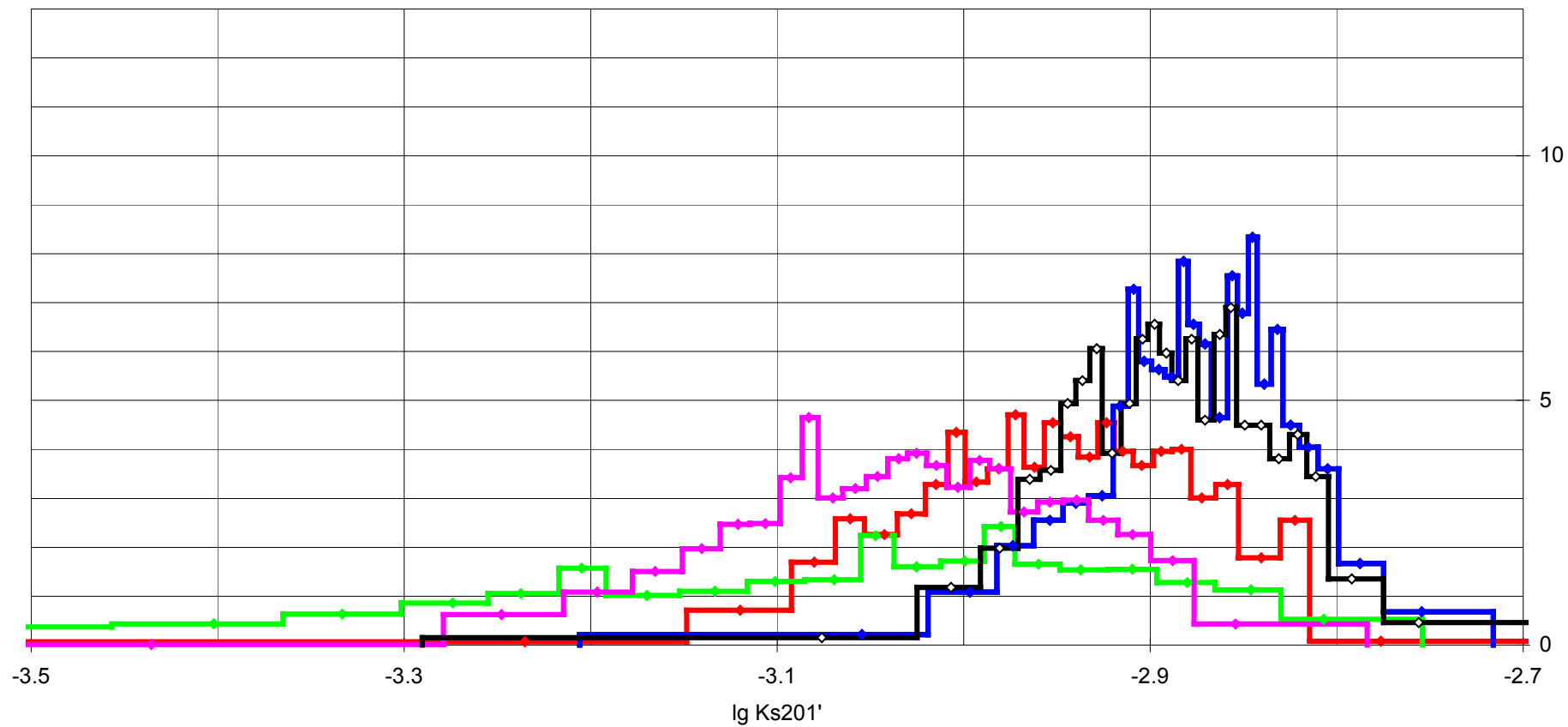
Figures:
Treatment of Np(V) spectrophotometric measurements
in carbonate / hydroxide media.
Room temperature (21°C), 3 M $NaClO_4$ aqueous solutions.
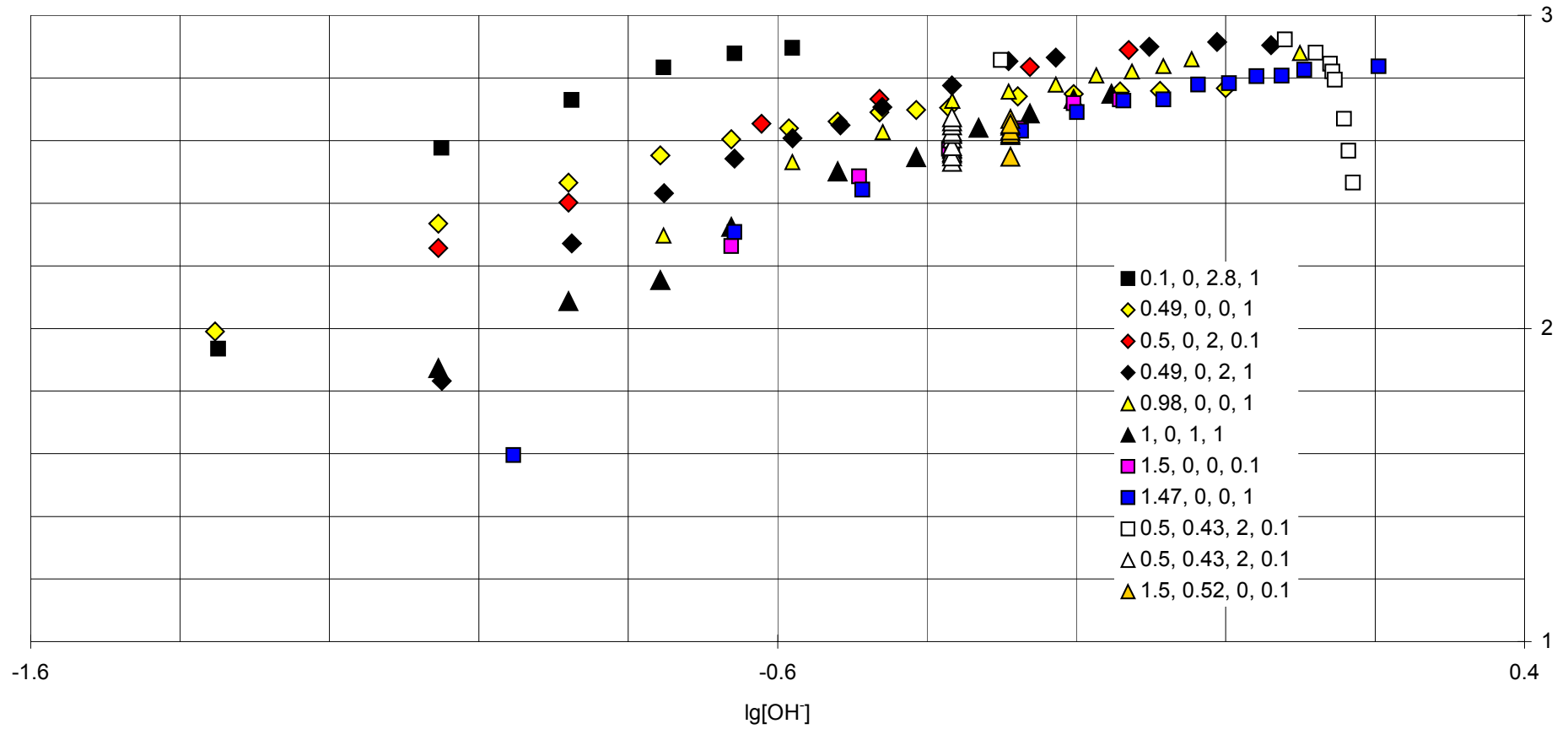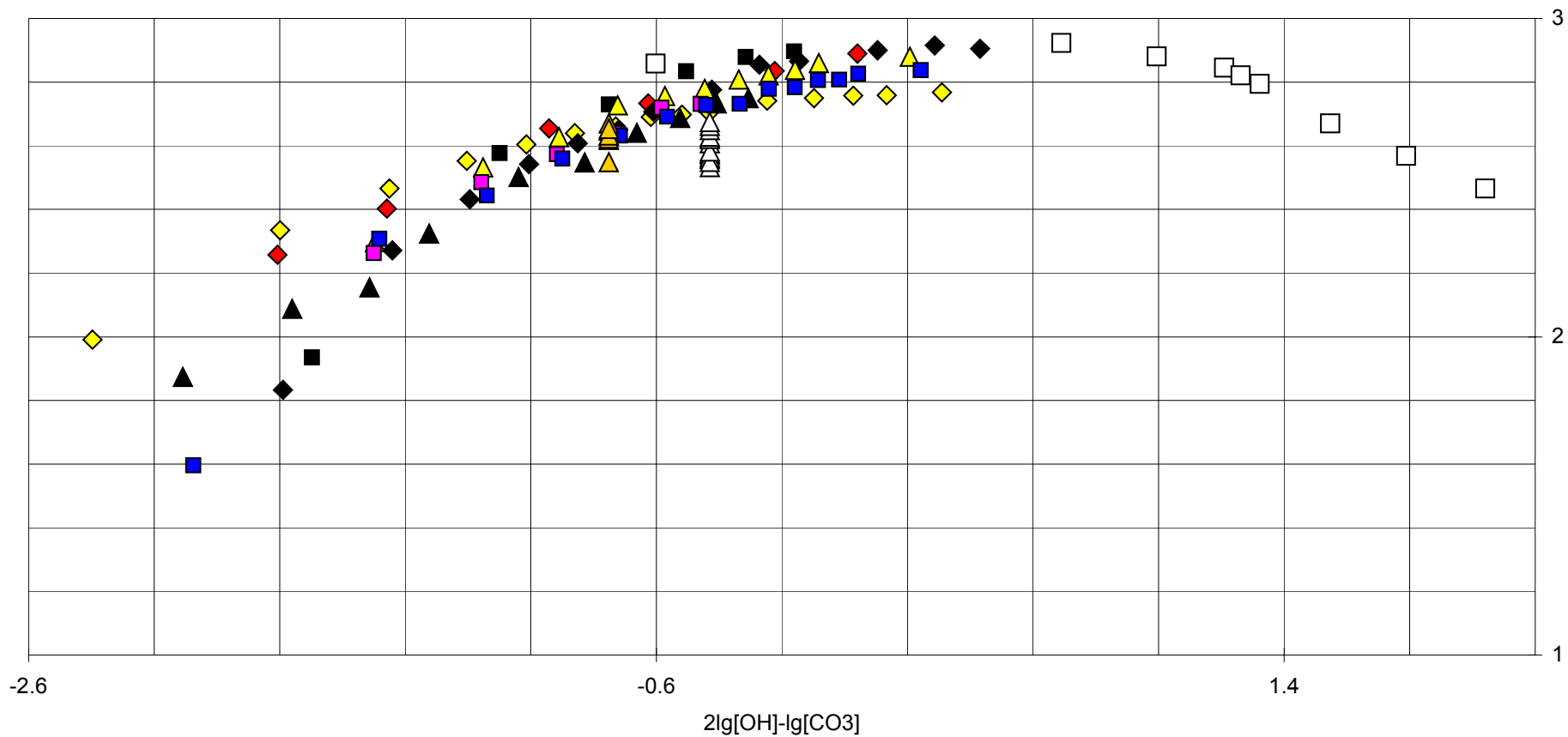Concentrated NaOH aqueous solutions were directly added in the
spectrophotometric (10 cm path length) cuvette previously filled
with a Na_2CO_3 aqueous solution.

Np(V) absorbance in carbonate hydroxide media

Legend:
- ■ 0.1, 0, 2.8, 1
- ◇ 0.49, 0, 0, 1
- ◆ 0.5, 0, 2, 0.1
- ◆ 0.49, 0, 2, 1
- △ 0.98, 0, 0, 1
- ▲ 1, 0, 1, 1
- ■ 1.5, 0, 0, 0.1
- ■ 1.47, 0, 0, 1
- □ 0.5, 0.43, 2, 0.1
- △ 0.5, 0.43, 2, 0.1
- ▲ 1.5, 0.52, 0, 0.1

x-axis: lg[OH⁻]

Np(V) aborbance in carbonate hydroxide media

2lg[OH]-lg[CO3]

Np(V) in carbonate hydroxide media (experimental domain)

Legend:
- ■ 0.1+ 0 + 2.8 (1.027)
- ◇ 0.49 + 0 + 0 (1.027)
- ◆ 0.5 + 0 + 2 (0.1027)
- ◆ 0.49 + 0 + 2 (1.009)
- ▲ 0.98 + 0 + 0 (1.027)
- ▲ 1 + 0 + 1 (1.027)
- ■ 1.5 + 0 + 0 (0.1027)
- ■ 1.47 + 0 + 0 (1.027)
- □ 0.5 + 0 + 2 (0.1027)
- △ 0.498 + 0.43 + 2 (0.1027)
- ▲ 0.498 + 0.43 + 2 (0.1027)