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Dr. Walter Kölle - Hannover
C:\Programme\CAS\BUCH_01.cas

Weitgehend unbelastetes Grundwasser (Mittelwerte)

12.08.2013 23:33:54

Buch, Analysenbeispiel 01

| | | | | |
|---|--------|-------------|--------|-------------|
| pH(T) | 7.620 | | | |
| T | 10.000 | °C | | |
| k | 53.700 | mS/m (25°C) | | |
| KS 4.3 | 5.070 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.310 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 10.000 | °C | | |
| c(O2) | 9.200 | mg/L | | |
| c(Na) | 0.148 | mmol/L | ß(Na) | 3.400 mg/L |
| c(K) | 0.026 | mmol/L | ß(K) | 1.000 mg/L |
| c(Ca) | 2.056 | mmol/L | ß(Ca) | 82.400 mg/L |
| c(Mg) | 0.806 | mmol/L | ß(Mg) | 19.600 mg/L |
| c(Cl) | 0.155 | mmol/L | ß(Cl) | 5.500 mg/L |
| c(NO3) | 0.137 | mmol/L | ß(NO3) | 8.500 mg/L |
| c(SO4) | 0.260 | mmol/L | ß(SO4) | 25.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 2.862 | mmol/L | | 16.052 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 5.898 | mmol/L |
| Summe der negativen Ladungen, S- | | | 5.832 | mmol/L |
| (S- - S+) / S+ *100 | | | 1.1 | % |

m-Wert aus der Ladungsbilanz 5.086 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.015 | 5.015 | 4.664 | mmol/L |
| c(DIC) | 5.280 | 5.302 | 4.932 | mmol/L |
| p-Wert | -0.265 | -0.288 | -0.268 | mmol/L |
| Anionen | 5.614 | 5.615 | 5.272 | mmol/L |
| Kationen | 5.685 | 5.687 | 5.694 | mmol/L |
| pH(T) | 7.650 | | | |
| pH(T) mess | 7.620 | | | |
| KS4.3 | | | 4.719 | mmol/L |
| KS4.3 mess | | | 5.070 | mmol/L |
| KB8.2 | | 0.333 | | mmol/L |
| KB8.2 mess | | 0.310 | | mmol/L |
| Tbew | 10.000 | 10.000 | 10.000 | °C |
| pH(Tbew) | 7.650 | 7.620 | 7.620 | Diff. < 0,05 |
| pH A | 7.307 | 7.307 | 7.336 | |
| SI(CaCO3) | 0.340 | 0.310 | 0.281 | |
| pHc(CaCO3) | 7.386 | 7.380 | 7.400 | |
| IOS rech | 8.580 | 8.582 | 8.420 | mmol/L |
| Dc(CaCO3) | -0.212 | -0.199 | -0.168 | mmol/L |
| Dc(CaCO3) | -21.254 | -19.890 | -16.768 | mg/L |

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Zusammen mit Analysenbeispiel 3: Herkunft und
Verhalten des Eisens

13.08.2013 09:34:10

Buch, Analysenbeispiel 02

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 7.090 | | | |
| T | 8.500 | °C | | |
| k | 91.500 | mS/m (25°C) | | |
| KS 4.3 | 5.300 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.130 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 8.500 | °C | | |
| c(O2) | 5.800 | mg/L | | |
| c(Na) | 0.548 | mmol/L | ß(Na) | 12.600 mg/L |
| c(K) | 0.041 | mmol/L | ß(K) | 1.600 mg/L |
| c(Ca) | 3.493 | mmol/L | ß(Ca) | 140.000 mg/L |
| c(Mg) | 0.543 | mmol/L | ß(Mg) | 13.200 mg/L |
| c(Cl) | 1.156 | mmol/L | ß(Cl) | 41.000 mg/L |
| c(NO3) | 0.693 | mmol/L | ß(NO3) | 43.000 mg/L |
| c(SO4) | 0.750 | mmol/L | ß(SO4) | 72.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 4.036 | mmol/L | | 22.636 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 8.661 | mmol/L |
| Summe der negativen Ladungen, S- | | | 8.599 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.7 | % |

m-Wert aus der Ladungsbilanz 5.312 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.243 | 5.243 | 4.999 | mmol/L |
| c(DIC) | 6.288 | 6.341 | 6.047 | mmol/L |
| p-Wert | -1.045 | -1.099 | -1.048 | mmol/L |
| Anionen | 8.140 | 8.141 | 7.902 | mmol/L |
| Kationen | 8.210 | 8.210 | 8.215 | mmol/L |
| pH(T) | 7.111 | | | |
| pH(T) mess | 7.090 | | | |
| KS4.3 | | | 5.056 | mmol/L |
| KS4.3 mess | | | 5.300 | mmol/L |
| KB8.2 | | 1.184 | | mmol/L |
| KB8.2 mess | | 1.130 | | mmol/L |
| Tbew | 8.500 | 8.500 | 8.500 | °C |
| pH(Tbew) | 7.111 | 7.090 | 7.090 | Diff. < 0,05 |
| pH A | 7.130 | 7.130 | 7.149 | |
| SI(CaCO3) | -0.018 | -0.040 | -0.059 | |
| pHc(CaCO3) | 7.124 | 7.117 | 7.130 | |
| IOS rech | 12.517 | 12.518 | 12.406 | mmol/L |
| Dc(CaCO3) | 0.022 | 0.049 | 0.069 | mmol/L |
| Dc(CaCO3) | 2.226 | 4.900 | 6.953 | mg/L |

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14.08.2013 10:04:09

Buch, Analysenbeispiel 03

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 7.040 | | | |
| T | 8.900 | °C | | |
| k | 92.100 | mS/m (25°C) | | |
| KS 4.3 | 5.500 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.300 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 8.900 | °C | | |
| c(O2) | 4.800 | mg/L | | |
| c(Na) | 0.570 | mmol/L | ß(Na) | 13.100 mg/L |
| c(K) | 0.023 | mmol/L | ß(K) | 0.900 mg/L |
| c(Ca) | 3.593 | mmol/L | ß(Ca) | 144.000 mg/L |
| c(Mg) | 0.543 | mmol/L | ß(Mg) | 13.200 mg/L |
| c(Cl) | 1.100 | mmol/L | ß(Cl) | 39.000 mg/L |
| c(NO3) | 0.532 | mmol/L | ß(NO3) | 33.000 mg/L |
| c(SO4) | 0.865 | mmol/L | ß(SO4) | 83.000 mg/L |
| c(PO4) | 0.001 | mmol/L | ß(PO4) | 0.080 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.003 | mmol/L | ß(Fe) | 0.160 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 4.136 | mmol/L | | 23.197 °dH |
| O2-Bedarf | 0.001 | mmol/L | | 0.023 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 8.871 | mmol/L |
| Summe der negativen Ladungen, S- | | | 8.813 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.7 | % |

m-Wert aus der Ladungsbilanz 5.503 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.443 | 5.443 | 5.198 | mmol/L |
| c(DIC) | 6.650 | 6.709 | 6.408 | mmol/L |
| p-Wert | -1.207 | -1.266 | -1.210 | mmol/L |
| Anionen | 8.296 | 8.296 | 8.056 | mmol/L |
| Kationen | 8.361 | 8.362 | 8.367 | mmol/L |
| pH(T) | 7.061 | | | |
| pH(T) mess | 7.040 | | | |
| KS4.3 | | | 5.254 | mmol/L |
| KS4.3 mess | | | 5.500 | mmol/L |
| KB8.2 | | 1.360 | | mmol/L |
| KB8.2 mess | | 1.300 | | mmol/L |
| Tbew | 8.900 | 8.900 | 8.900 | °C |
| pH(Tbew) | 7.061 | 7.040 | 7.040 | Diff. < 0,05 |
| pH A | 7.100 | 7.100 | 7.119 | |
| SI(CaCO3) | -0.040 | -0.060 | -0.079 | |
| pHc(CaCO3) | 7.087 | 7.080 | 7.093 | |
| IOS rech | 12.831 | 12.831 | 12.718 | mmol/L |
| Dc(CaCO3) | 0.052 | 0.081 | 0.101 | mmol/L |
| Dc(CaCO3) | 5.235 | 8.096 | 10.144 | mg/L |

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Zusammen mit den Analysenbeispielen 5 und 6:
Denitrifikation im kalkarmen Grundwasserleiter,
Huminstoffe

14.08.2013 10:19:38

Buch, Analysenbeispiel 04

| | | | | |
|---|--------|-------------|--------|-------------|
| pH(T) | 7.160 | | | |
| T | 8.600 | °C | | |
| k | 38.400 | mS/m (25°C) | | |
| KS 4.3 | 1.670 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.300 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 8.600 | °C | | |
| c(O2) | 0.200 | mg/L | | |
| c(Na) | 0.478 | mmol/L | ß(Na) | 11.000 mg/L |
| c(K) | 0.026 | mmol/L | ß(K) | 1.000 mg/L |
| c(Ca) | 1.372 | mmol/L | ß(Ca) | 55.000 mg/L |
| c(Mg) | 0.226 | mmol/L | ß(Mg) | 5.500 mg/L |
| c(Cl) | 0.564 | mmol/L | ß(Cl) | 20.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 0.698 | mmol/L | ß(SO4) | 67.000 mg/L |
| c(PO4) | 0.001 | mmol/L | ß(PO4) | 0.060 mg/L |
| c(NH4) | 0.003 | mmol/L | ß(NH4) | 0.060 mg/L |
| c(Fe II) | 0.027 | mmol/L | ß(Fe) | 1.500 mg/L |
| c(Mn II) | 0.003 | mmol/L | ß(Mn) | 0.190 mg/L |
| Härte | 1.598 | mmol/L | | 8.962 °dH |
| O2-Bedarf | 0.015 | mmol/L | | 0.483 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 3.763 | mmol/L |
| Summe der negativen Ladungen, S- | | | 3.582 | mmol/L |
| (S- - S+) / S+ *100 | | | 4.9 | % |

m-Wert aus der Ladungsbilanz 1.740 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 1.615 | 1.615 | 1.558 | mmol/L |
| c(DIC) | 1.906 | 1.917 | 1.849 | mmol/L |
| p-Wert | -0.291 | -0.302 | -0.291 | mmol/L |
| Anionen | 3.388 | 3.388 | 3.332 | mmol/L |
| Kationen | 3.576 | 3.576 | 3.577 | mmol/L |
| pH(T) | 7.176 | | | |
| pH(T) mess | 7.160 | | | |
| KS4.3 | | | 1.612 | mmol/L |
| KS4.3 mess | | | 1.670 | mmol/L |
| KB8.2 | | 0.311 | | mmol/L |
| KB8.2 mess | | 0.300 | | mmol/L |
| Tbew | 8.600 | 8.600 | 8.600 | °C |
| pH(Tbew) | 7.176 | 7.160 | 7.160 | Diff. < 0,05 |
| pH A | 7.971 | 7.971 | 7.986 | |
| SI(CaCO3) | -0.789 | -0.805 | -0.820 | |
| pHc(CaCO3) | 7.810 | 7.804 | 7.820 | |
| IOS rech | 5.624 | 5.624 | 5.596 | mmol/L |
| Dc(CaCO3) | 0.218 | 0.227 | 0.222 | mmol/L |
| Dc(CaCO3) | 21.790 | 22.681 | 22.187 | mg/L |

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Buch, Analysenbeispiel 05

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 6.730 | | | |
| T | 9.000 | °C | | |
| k | 124.500 | mS/m (25°C) | | |
| KS 4.3 | 2.950 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.380 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 8.800 | mg/L | | |
| Tbew | 9.000 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 1.740 | mmol/L | ß(Na) | 40.000 mg/L |
| c(K) | 0.118 | mmol/L | ß(K) | 4.600 mg/L |
| c(Ca) | 5.090 | mmol/L | ß(Ca) | 204.000 mg/L |
| c(Mg) | 0.337 | mmol/L | ß(Mg) | 8.200 mg/L |
| c(Cl) | 1.749 | mmol/L | ß(Cl) | 62.000 mg/L |
| c(NO3) | 0.005 | mmol/L | ß(NO3) | 0.300 mg/L |
| c(SO4) | 5.000 | mmol/L | ß(SO4) | 480.000 mg/L |
| c(PO4) | 0.005 | mmol/L | ß(PO4) | 0.480 mg/L |
| c(NH4) | 0.054 | mmol/L | ß(NH4) | 0.980 mg/L |
| c(Fe II) | 0.525 | mmol/L | ß(Fe) | 29.300 mg/L |
| c(Mn II) | 0.038 | mmol/L | ß(Mn) | 2.110 mg/L |
| Härte | 5.427 | mmol/L | | 30.437 °dH |
| O2-Bedarf | 0.259 | mmol/L | | 8.292 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 13.892 | mmol/L |
| Summe der negativen Ladungen, S- | | | 14.661 | mmol/L |
| (S- - S+) / S+ *100 | | | 5.4 | % > 5 % !!! |

m-Wert aus der Ladungsbilanz 0.958 mmol/L

| | KS 4.3 KB 8.2 | KS 4.3 pH(T) | KB 8.2 pH(T) | |
|------------|------------------|-----------------|-----------------|--------------|
| m-Wert | 2.887 | 2.887 | 2.847 | mmol/L |
| c(DIC) | 4.190 | 4.209 | 4.151 | mmol/L |
| p-Wert | -1.303 | -1.322 | -1.304 | mmol/L |
| Anionen | 12.574 | 12.574 | 12.534 | mmol/L |
| Kationen | 11.825 | 11.825 | 11.825 | mmol/L |
| pH(T) | 6.736 | | | |
| pH(T) mess | 6.730 | | | |
| KS4.3 | | | 2.907 | mmol/L |
| KS4.3 mess | | | 2.950 | mmol/L |
| KB8.2 | | 1.399 | | mmol/L |
| KB8.2 mess | | 1.380 | | mmol/L |
| Tbew | 9.000 | 9.000 | 9.000 | °C |
| pH(Tbew) | 6.736 | 6.730 | 6.730 | Diff. < 0,05 |
| pH A | 7.343 | 7.343 | 7.349 | |
| SI(CaCO3) | -0.605 | -0.611 | -0.617 | |
| pHc(CaCO3) | 7.149 | 7.146 | 7.151 | |
| IOS rech | 21.126 | 21.126 | 21.106 | mmol/L |
| Dc(CaCO3) | 0.606 | 0.616 | 0.614 | mmol/L |
| Dc(CaCO3) | 60.652 | 61.691 | 61.435 | mg/L |

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14.08.2013 11:00:14

Buch, Analysenbeispiel 06

| | | | | |
|---|--------|-------------|--------|---------------------------------------|
| pH(T) | 6.530 | | | |
| T | 10.000 | °C | | |
| k | 32.500 | mS/m (25°C) | | |
| KS 4.3 | 2.450 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.920 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 10.000 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 0.705 | mmol/L | ß(Na) | 16.200 mg/L (abgeschätzt aus Chlorid) |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 mg/L |
| c(Ca) | 1.048 | mmol/L | ß(Ca) | 42.000 mg/L |
| c(Mg) | 0.420 | mmol/L | ß(Mg) | 10.200 mg/L |
| c(Cl) | 0.705 | mmol/L | ß(Cl) | 25.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 0.385 | mmol/L | ß(SO4) | 37.000 mg/L |
| c(PO4) | 0.007 | mmol/L | ß(PO4) | 0.670 mg/L |
| c(NH4) | 0.061 | mmol/L | ß(NH4) | 1.100 mg/L |
| c(Fe II) | 0.165 | mmol/L | ß(Fe) | 9.200 mg/L |
| c(Mn II) | 0.011 | mmol/L | ß(Mn) | 0.630 mg/L |
| Härte | 1.468 | mmol/L | | 8.233 °dH |
| O2-Bedarf | 0.169 | mmol/L | | 5.411 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 4.054 | mmol/L |
| Summe der negativen Ladungen, S- | | | 3.883 | mmol/L |
| (S- - S+) / S+ *100 | | | 4.3 | % |

m-Wert aus der Ladungsbilanz 2.166 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 2.402 | 2.402 | 2.442 | mmol/L |
| c(DIC) | 4.298 | 4.267 | 4.337 | mmol/L |
| p-Wert | -1.896 | -1.865 | -1.896 | mmol/L |
| Anionen | 3.766 | 3.766 | 3.806 | mmol/L |
| Kationen | 3.944 | 3.944 | 3.943 | mmol/L |
| pH(T) | 6.523 | | | |
| pH(T) mess | 6.530 | | | |
| KS4.3 | | | 2.489 | mmol/L |
| KS4.3 mess | | | 2.450 | mmol/L |
| KB8.2 | | 1.889 | | mmol/L |
| KB8.2 mess | | 1.920 | | mmol/L |
| Tbew | 10.000 | 10.000 | 10.000 | °C |
| pH(Tbew) | 6.523 | 6.530 | 6.530 | Diff. < 0,05 |
| pH A | 7.888 | 7.888 | 7.881 | |
| SI(CaCO3) | -1.357 | -1.350 | -1.344 | |
| pHc(CaCO3) | 7.278 | 7.284 | 7.277 | |
| IOS rech | 5.776 | 5.776 | 5.795 | mmol/L |
| Dc(CaCO3) | 1.254 | 1.236 | 1.248 | mmol/L |
| Dc(CaCO3) | 125.499 | 123.741 | 124.911 | mg/L |

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Zusammen mit Analysenbeispiel 8: Denitrifikation
im kalkhaltigen Grundwasserleiter

14.08.2013 11:07:59

Buch, Analysenbeispiel 07

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 7.040 | | | |
| T | 9.600 | °C | | |
| k | 118.600 | mS/m (25°C) | | |
| KS 4.3 | 5.600 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.270 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 1.600 | mmol/L | | |
| TOC | 1.600 | mg/L | | |
| Tbew | 9.600 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 1.135 | mmol/L | ß(Na) | 26.100 mg/L |
| c(K) | 0.049 | mmol/L | ß(K) | 1.900 mg/L |
| c(Ca) | 5.639 | mmol/L | ß(Ca) | 226.000 mg/L |
| c(Mg) | 0.148 | mmol/L | ß(Mg) | 3.600 mg/L |
| c(Cl) | 2.228 | mmol/L | ß(Cl) | 79.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 2.583 | mmol/L | ß(SO4) | 248.000 mg/L |
| c(PO4) | 0.002 | mmol/L | ß(PO4) | 0.180 mg/L |
| c(NH4) | 0.003 | mmol/L | ß(NH4) | 0.060 mg/L |
| c(Fe II) | 0.065 | mmol/L | ß(Fe) | 3.640 mg/L |
| c(Mn II) | 0.009 | mmol/L | ß(Mn) | 0.470 mg/L |
| Härte | 5.787 | mmol/L | | 32.457 °dH |
| O2-Bedarf | 0.027 | mmol/L | | 0.871 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 12.909 | mmol/L |
| Summe der negativen Ladungen, S- | | | 12.947 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.3 | % |

m-Wert aus der Ladungsbilanz 5.364 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.540 | 5.540 | 5.173 | mmol/L |
| c(DIC) | 6.680 | 6.767 | 6.320 | mmol/L |
| p-Wert | -1.141 | -1.228 | -1.147 | mmol/L |
| Anionen | 11.533 | 11.534 | 11.174 | mmol/L |
| Kationen | 11.508 | 11.509 | 11.515 | mmol/L |
| pH(T) | 7.071 | | | |
| pH(T) mess | 7.040 | | | |
| KS4.3 | | | 5.232 | mmol/L |
| KS4.3 mess | | | 5.600 | mmol/L |
| KB8.2 | | 1.358 | | mmol/L |
| KB8.2 mess | | 1.270 | | mmol/L |
| Tbew | 9.600 | 9.600 | 9.600 | °C |
| pH(Tbew) | 7.071 | 7.040 | 7.040 | Diff. < 0,05 |
| pH A | 6.956 | 6.956 | 6.984 | |
| SI(CaCO3) | 0.114 | 0.083 | 0.055 | |
| pHc(CaCO3) | 6.992 | 6.983 | 7.001 | |
| IOS rech | 18.574 | 18.575 | 18.404 | mmol/L |
| Dc(CaCO3) | -0.159 | -0.119 | -0.074 | mmol/L |
| Dc(CaCO3) | -15.884 | -11.899 | -7.400 | mg/L |

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Buch, Analysenbeispiel 08

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 6.890 | | | |
| T | 8.200 | °C | | |
| k | 149.500 | mS/m (25°C) | | |
| KS 4.3 | 6.650 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 2.160 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.900 | mg/L | | |
| Tbew | 8.200 | °C | | |
| c(O2) | 0.900 | mg/L | | |
| c(Na) | 1.257 | mmol/L | ß(Na) | 28.900 mg/L |
| c(K) | 0.056 | mmol/L | ß(K) | 2.200 mg/L |
| c(Ca) | 7.086 | mmol/L | ß(Ca) | 284.000 mg/L |
| c(Mg) | 0.362 | mmol/L | ß(Mg) | 8.800 mg/L |
| c(Cl) | 2.352 | mmol/L | ß(Cl) | 83.400 mg/L |
| c(NO3) | 0.005 | mmol/L | ß(NO3) | 0.280 mg/L |
| c(SO4) | 3.844 | mmol/L | ß(SO4) | 369.000 mg/L |
| c(PO4) | 0.001 | mmol/L | ß(PO4) | 0.060 mg/L |
| c(NH4) | 0.011 | mmol/L | ß(NH4) | 0.200 mg/L |
| c(Fe II) | 0.036 | mmol/L | ß(Fe) | 1.990 mg/L |
| c(Mn II) | 0.012 | mmol/L | ß(Mn) | 0.680 mg/L |
| Härte | 7.448 | mmol/L | | 41.772 °dH |
| O2-Bedarf | 0.037 | mmol/L | | 1.194 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 16.316 | mmol/L |
| Summe der negativen Ladungen, S- | | | 16.646 | mmol/L |
| (S- - S+) / S+ *100 | | | 2.0 | % |

m-Wert aus der Ladungsbilanz 6.164 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 6.586 | 6.586 | 6.213 | mmol/L |
| c(DIC) | 8.555 | 8.680 | 8.189 | mmol/L |
| p-Wert | -1.969 | -2.094 | -1.976 | mmol/L |
| Anionen | 14.439 | 14.439 | 14.073 | mmol/L |
| Kationen | 14.124 | 14.124 | 14.130 | mmol/L |
| pH(T) | 6.916 | | | |
| pH(T) mess | 6.890 | | | |
| KS4.3 | | | 6.275 | mmol/L |
| KS4.3 mess | | | 6.650 | mmol/L |
| KB8.2 | | 2.287 | | mmol/L |
| KB8.2 mess | | 2.160 | | mmol/L |
| Tbew | 8.200 | 8.200 | 8.200 | °C |
| pH(Tbew) | 6.916 | 6.890 | 6.890 | Diff. < 0,05 |
| pH A | 6.850 | 6.850 | 6.874 | |
| SI(CaCO3) | 0.066 | 0.040 | 0.016 | |
| pHc(CaCO3) | 6.873 | 6.864 | 6.879 | |
| IOS rech | 23.437 | 23.438 | 23.263 | mmol/L |
| Dc(CaCO3) | -0.128 | -0.079 | -0.030 | mmol/L |
| Dc(CaCO3) | -12.770 | -7.871 | -3.020 | mg/L |

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Zusammen mit den Analysenbeispielen 10 und 11:
Sulfatreduktion, Huminstoffe

14.08.2013 12:32:46

Buch, Analysenbeispiel 09

| | | | | |
|---|--------|-------------|--------|--------------------------------------|
| pH(T) | 7.000 | | | |
| T | 10.500 | °C | | |
| k | 44.000 | mS/m (25°C) | | |
| KS 4.3 | 5.600 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.450 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 10.500 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 0.391 | mmol/L | ß(Na) | 9.000 mg/L (abgeschätzt aus Chlorid) |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 mg/L |
| c(Ca) | 1.771 | mmol/L | ß(Ca) | 71.000 mg/L |
| c(Mg) | 0.650 | mmol/L | ß(Mg) | 15.800 mg/L |
| c(Cl) | 0.389 | mmol/L | ß(Cl) | 13.800 mg/L |
| c(NO3) | 0.006 | mmol/L | ß(NO3) | 0.360 mg/L |
| c(SO4) | 0.000 | mmol/L | ß(SO4) | 0.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.011 | mmol/L | ß(NH4) | 0.190 mg/L |
| c(Fe II) | 0.329 | mmol/L | ß(Fe) | 18.400 mg/L |
| c(Mn II) | 0.008 | mmol/L | ß(Mn) | 0.430 mg/L |
| Härte | 2.421 | mmol/L | | 13.578 °dH |
| O2-Bedarf | 0.107 | mmol/L | | 3.434 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 5.918 | mmol/L |
| Summe der negativen Ladungen, S- | | | 5.945 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.5 | % |
| m-Wert aus der Ladungsbilanz | | | 4.838 | mmol/L |

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.545 | 5.545 | 5.507 | mmol/L |
| c(DIC) | 6.950 | 6.960 | 6.912 | mmol/L |
| p-Wert | -1.405 | -1.415 | -1.405 | mmol/L |
| Anionen | 5.840 | 5.840 | 5.802 | mmol/L |
| Kationen | 5.818 | 5.818 | 5.818 | mmol/L |
| pH(T) | 7.003 | | | |
| pH(T) mess | 7.000 | | | |
| KS4.3 | | | 5.562 | mmol/L |
| KS4.3 mess | | | 5.600 | mmol/L |
| KB8.2 | | 1.460 | | mmol/L |
| KB8.2 mess | | 1.450 | | mmol/L |
| Tbew | 10.500 | 10.500 | 10.500 | °C |
| pH(Tbew) | 7.003 | 7.000 | 7.000 | Diff. < 0,05 |
| pH A | 7.312 | 7.312 | 7.315 | |
| SI(CaCO3) | -0.308 | -0.311 | -0.314 | |
| pHc(CaCO3) | 7.187 | 7.185 | 7.187 | |
| IOS rech | 8.491 | 8.491 | 8.474 | mmol/L |
| Dc(CaCO3) | 0.376 | 0.381 | 0.382 | mmol/L |
| Dc(CaCO3) | 37.615 | 38.095 | 38.207 | mg/L |

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Buch, Analysenbeispiel 10

| | | | | | |
|---|--------|-------------|--------|--------|--------------------------------|
| pH(T) | 7.290 | | | | |
| T | 10.400 | °C | | | |
| k | 54.000 | mS/m (25°C) | | | |
| KS 4.3 | 6.110 | mmol/L | | | |
| Ttit 4.3 | 20.000 | °C | | | |
| KB 8.2 | 0.800 | mmol/L | | | |
| KS 8.2 | 0.000 | mmol/L | | | |
| Ttit 8.2 | 20.000 | °C | | | |
| DIC | 0.000 | mmol/L | | | |
| TOC | 0.000 | mg/L | | | |
| Tbew | 10.400 | °C | | | |
| c(O2) | 0.000 | mg/L | | | |
| c(Na) | 0.874 | mmol/L | ß(Na) | 20.100 | mg/L (abgeschätzt aus Chlorid) |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 | mg/L |
| c(Ca) | 2.221 | mmol/L | ß(Ca) | 89.000 | mg/L |
| c(Mg) | 0.617 | mmol/L | ß(Mg) | 15.000 | mg/L |
| c(Cl) | 0.874 | mmol/L | ß(Cl) | 31.000 | mg/L |
| c(NO3) | 0.001 | mmol/L | ß(NO3) | 0.040 | mg/L |
| c(SO4) | 0.000 | mmol/L | ß(SO4) | 0.000 | mg/L |
| c(PO4) | 0.008 | mmol/L | ß(PO4) | 0.770 | mg/L |
| c(NH4) | 0.066 | mmol/L | ß(NH4) | 1.190 | mg/L |
| c(Fe II) | 0.039 | mmol/L | ß(Fe) | 2.170 | mg/L |
| c(Mn II) | 0.003 | mmol/L | ß(Mn) | 0.150 | mg/L |
| Härte | 2.838 | mmol/L | | 15.917 | °dH |
| O2-Bedarf | 0.143 | mmol/L | | 4.585 | mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | | |
| Summe der positiven Ladungen, S+ | | | | 6.700 | mmol/L |
| Summe der negativen Ladungen, S- | | | | 6.948 | mmol/L |
| (S- - S+) / S+ *100 | | | | 3.6 | % |

m-Wert aus der Ladungsbilanz 5.675 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 6.063 | 6.063 | 5.773 | mmol/L |
| c(DIC) | 6.787 | 6.826 | 6.499 | mmol/L |
| p-Wert | -0.724 | -0.762 | -0.726 | mmol/L |
| Anionen | 6.802 | 6.802 | 6.518 | mmol/L |
| Kationen | 6.563 | 6.564 | 6.570 | mmol/L |
| pH(T) | 7.311 | | | |
| pH(T) mess | 7.290 | | | |
| KS4.3 | | | 5.820 | mmol/L |
| KS4.3 mess | | | 6.110 | mmol/L |
| KB8.2 | | 0.839 | | mmol/L |
| KB8.2 mess | | 0.800 | | mmol/L |
| Tbew | 10.400 | 10.400 | 10.400 | °C |
| pH(Tbew) | 7.311 | 7.290 | 7.290 | Diff. < 0,05 |
| pH A | 7.190 | 7.190 | 7.209 | |
| SI(CaCO3) | 0.121 | 0.100 | 0.081 | |
| pHc(CaCO3) | 7.229 | 7.223 | 7.235 | |
| IOS rech | 9.444 | 9.445 | 9.311 | mmol/L |
| Dc(CaCO3) | -0.126 | -0.106 | -0.082 | mmol/L |
| Dc(CaCO3) | -12.573 | -10.569 | -8.170 | mg/L |

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Buch, Analysenbeispiel 11

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 7.320 | | | |
| T | 12.600 | °C | | |
| k | 52.000 | mS/m (25°C) | | |
| KS 4.3 | 6.100 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.710 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 12.600 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 0.352 | mmol/L | ß(Na) | 8.100 mg/L |
| c(K) | 0.051 | mmol/L | ß(K) | 2.000 mg/L |
| c(Ca) | 2.545 | mmol/L | ß(Ca) | 102.000 mg/L |
| c(Mg) | 0.424 | mmol/L | ß(Mg) | 10.300 mg/L |
| c(Cl) | 0.279 | mmol/L | ß(Cl) | 9.900 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 0.000 | mmol/L | ß(SO4) | 0.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.045 | mmol/L | ß(NH4) | 0.810 mg/L |
| c(Fe II) | 0.040 | mmol/L | ß(Fe) | 2.210 mg/L |
| c(Mn II) | 0.003 | mmol/L | ß(Mn) | 0.160 mg/L |
| Härte | 2.969 | mmol/L | | 16.652 °dH |
| O2-Bedarf | 0.101 | mmol/L | | 3.243 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | | 6.472 mmol/L |
| Summe der negativen Ladungen, S- | | | | 6.329 mmol/L |
| (S- - S+) / S+ *100 | | | | 2.2 % |

m-Wert aus der Ladungsbilanz 6.062 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 6.045 | 6.045 | 5.693 | mmol/L |
| c(DIC) | 6.690 | 6.733 | 6.341 | mmol/L |
| p-Wert | -0.645 | -0.687 | -0.648 | mmol/L |
| Anionen | 6.177 | 6.178 | 5.834 | mmol/L |
| Kationen | 6.325 | 6.326 | 6.334 | mmol/L |
| pH(T) | 7.346 | | | |
| pH(T) mess | 7.320 | | | |
| KS4.3 | | | 5.748 | mmol/L |
| KS4.3 mess | | | 6.100 | mmol/L |
| KB8.2 | | 0.753 | | mmol/L |
| KB8.2 mess | | 0.710 | | mmol/L |
| Tbew | 12.600 | 12.600 | 12.600 | °C |
| pH(Tbew) | 7.346 | 7.320 | 7.320 | Diff. < 0,05 |
| pH A | 7.093 | 7.093 | 7.117 | |
| SI(CaCO3) | 0.252 | 0.226 | 0.202 | |
| pHc(CaCO3) | 7.170 | 7.163 | 7.177 | |
| IOS rech | 9.132 | 9.133 | 8.972 | mmol/L |
| Dc(CaCO3) | -0.260 | -0.238 | -0.202 | mmol/L |
| Dc(CaCO3) | -26.017 | -23.867 | -20.252 | mg/L |

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Strontiumhaltiges Wasser

14.08.2013 18:46:13

Buch, Analysenbeispiel 12 (40 mg/l Strontium sind nicht berücksichtigt, trotzdem ist die Ladungsbilanz ausgeglichen)

| | | | | |
|--|--------|-------------|--------|--------------|
| pH(T) | 7.310 | | | |
| T | 12.300 | °C | | |
| k | 95.600 | mS/m (25°C) | | |
| KS 4.3 | 5.060 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.640 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 1.600 | mg/L | | |
| Tbew | 12.300 | °C | | |
| c(O2) | 0.300 | mg/L | | |
| c(Na) | 0.796 | mmol/L | ß(Na) | 18.300 mg/L |
| c(K) | 0.059 | mmol/L | ß(K) | 2.300 mg/L |
| c(Ca) | 2.445 | mmol/L | ß(Ca) | 98.000 mg/L |
| c(Mg) | 2.551 | mmol/L | ß(Mg) | 62.000 mg/L |
| c(Cl) | 0.592 | mmol/L | ß(Cl) | 21.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 2.573 | mmol/L | ß(SO4) | 247.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.020 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 4.996 | mmol/L | | 28.020 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.003 mg/L |
| Ladungsbilanz, LB [ohne Komplexierung] | | | | |
| Summe der positiven Ladungen, S+ | | | 10.847 | mmol/L |
| Summe der negativen Ladungen, S- | | | 10.748 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.9 | % |

m-Wert aus der Ladungsbilanz 5.109 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 4.998 | 4.998 | 5.071 | mmol/L |
| c(DIC) | 5.569 | 5.560 | 5.641 | mmol/L |
| p-Wert | -0.571 | -0.562 | -0.570 | mmol/L |
| Anionen | 9.547 | 9.547 | 9.619 | mmol/L |
| Kationen | 9.658 | 9.658 | 9.657 | mmol/L |
| pH(T) | 7.303 | | | |
| pH(T) mess | 7.310 | | | |
| KS4.3 | | | 5.132 | mmol/L |
| KS4.3 mess | | | 5.060 | mmol/L |
| KB8.2 | | 0.631 | | mmol/L |
| KB8.2 mess | | 0.640 | | mmol/L |
| Tbew | 12.300 | 12.300 | 12.300 | °C |
| pH(Tbew) | 7.303 | 7.310 | 7.310 | Diff. < 0,05 |
| pH A | 7.308 | 7.308 | 7.302 | |
| SI(CaCO3) | -0.005 | 0.002 | 0.008 | |
| pHc(CaCO3) | 7.307 | 7.309 | 7.304 | |
| IOS rech | 15.996 | 15.995 | 16.030 | mmol/L |
| Dc(CaCO3) | 0.004 | -0.001 | -0.006 | mmol/L |
| Dc(CaCO3) | 0.402 | -0.136 | -0.631 | mg/L |

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Extrembelastung durch Nitrifikation und
Tonmineralverwitterung

14.08.2013 20:38:05

Buch, Analysenbeispiel 13

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 4.800 | | | |
| T | 9.300 | °C | | |
| k | 100.400 | mS/m (25°C) | | |
| KS 4.3 | 0.120 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 5.740 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 9.300 | °C | | |
| c(O2) | 9.500 | mg/L | | |
| c(Na) | 0.326 | mmol/L | ß(Na) | 7.500 mg/L |
| c(K) | 0.223 | mmol/L | ß(K) | 8.700 mg/L |
| c(Ca) | 2.048 | mmol/L | ß(Ca) | 82.100 mg/L |
| c(Mg) | 2.020 | mmol/L | ß(Mg) | 49.100 mg/L |
| c(Cl) | 0.874 | mmol/L | ß(Cl) | 31.000 mg/L |
| c(NO3) | 7.015 | mmol/L | ß(NO3) | 435.000 mg/L |
| c(SO4) | 0.458 | mmol/L | ß(SO4) | 44.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.009 | mmol/L | ß(Mn) | 0.520 mg/L |
| Härte | 4.068 | mmol/L | | 22.815 °dH |
| O2-Bedarf | 0.005 | mmol/L | | 0.152 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 8.703 | mmol/L |
| Summe der negativen Ladungen, S- | | | 8.875 | mmol/L |
| (S- - S+) / S+ *100 | | | 2.0 | % |

m-Wert aus der Ladungsbilanz -0.120 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.063 | 0.063 | 0.122 | mmol/L |
| c(DIC) | 5.739 | 3.360 | 5.797 | mmol/L |
| p-Wert | -5.676 | -3.297 | -5.675 | mmol/L |
| Anionen | 8.715 | 8.705 | 8.763 | mmol/L |
| Kationen | 8.549 | 8.540 | 8.539 | mmol/L |
| pH(T) | 4.613 | | | |
| pH(T) mess | 4.800 | | | |
| KS4.3 | | | 0.178 | mmol/L |
| KS4.3 mess | | | 0.120 | mmol/L |
| KB8.2 | | 3.336 | | mmol/L |
| KB8.2 mess | | 5.740 | | mmol/L |
| Tbew | 9.300 | 9.300 | 9.300 | °C |
| pH(Tbew) | 4.613 | 4.800 | 4.800 | Diff. > 0,05 |
| pH A | 10.233 | 10.233 | 9.080 | |
| SI(CaCO3) | -4.478 | -4.340 | -4.103 | |
| pHc(CaCO3) | 6.868 | 7.097 | 6.867 | |
| IOS rech | 12.986 | 12.977 | 13.003 | mmol/L |
| Dc(CaCO3) | 3.423 | 2.367 | 3.409 | mmol/L |
| Dc(CaCO3) | 342.618 | 236.894 | 341.162 | mg/L |

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Zusammen mit Analysenbeispiel 15: "Ionensorption"

14.08.2013 23:05:49

Buch, Analysenbeispiel 14

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 6.800 | | | |
| T | 9.600 | °C | | |
| k | 11.800 | mS/m (25°C) | | |
| KS 4.3 | 0.650 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.270 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.900 | mg/L | | |
| Tbew | 9.600 | °C | | |
| c(O2) | 0.100 | mg/L | | |
| c(Na) | 0.291 | mmol/L | ß(Na) | 6.700 mg/L |
| c(K) | 0.033 | mmol/L | ß(K) | 1.300 mg/L |
| c(Ca) | 0.274 | mmol/L | ß(Ca) | 11.000 mg/L |
| c(Mg) | 0.070 | mmol/L | ß(Mg) | 1.700 mg/L |
| c(Cl) | 0.183 | mmol/L | ß(Cl) | 6.500 mg/L |
| c(NO3) | 0.003 | mmol/L | ß(NO3) | 0.200 mg/L |
| c(SO4) | 0.115 | mmol/L | ß(SO4) | 11.000 mg/L |
| c(PO4) | 0.014 | mmol/L | ß(PO4) | 1.300 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.064 | mmol/L | ß(Fe) | 3.600 mg/L |
| c(Mn II) | 0.002 | mmol/L | ß(Mn) | 0.090 mg/L |
| Härte | 0.344 | mmol/L | | 1.929 °dH |
| O2-Bedarf | 0.017 | mmol/L | | 0.541 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 1.144 | mmol/L |
| Summe der negativen Ladungen, S- | | | 1.034 | mmol/L |
| (S- - S+) / S+ *100 | | | 10.1 | % > 10 % !!! |

m-Wert aus der Ladungsbilanz 0.596 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.611 | 0.611 | 0.609 | mmol/L |
| c(DIC) | 0.856 | 0.857 | 0.854 | mmol/L |
| p-Wert | -0.245 | -0.245 | -0.245 | mmol/L |
| Anionen | 1.016 | 1.016 | 1.014 | mmol/L |
| Kationen | 1.133 | 1.133 | 1.133 | mmol/L |
| pH(T) | 6.801 | | | |
| pH(T) mess | 6.800 | | | |
| KS4.3 | | | 0.648 | mmol/L |
| KS4.3 mess | | | 0.650 | mmol/L |
| KB8.2 | | 0.271 | | mmol/L |
| KB8.2 mess | | 0.270 | | mmol/L |
| Tbew | 9.600 | 9.600 | 9.600 | °C |
| pH(Tbew) | 6.801 | 6.800 | 6.800 | Diff. < 0,05 |
| pH A | 9.051 | 9.051 | 9.053 | |
| SI(CaCO3) | -2.181 | -2.182 | -2.184 | |
| pHc(CaCO3) | 8.433 | 8.431 | 8.433 | |
| IOS rech | 1.593 | 1.593 | 1.592 | mmol/L |
| Dc(CaCO3) | 0.280 | 0.281 | 0.280 | mmol/L |
| Dc(CaCO3) | 28.035 | 28.118 | 28.038 | mg/L |

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14.08.2013 23:11:32

Buch, Analysenbeispiel 15

| | | | | |
|---|--------|-------------|--------|-------------|
| pH(T) | 5.760 | | | |
| T | 8.700 | °C | | |
| k | 13.700 | mS/m (25°C) | | |
| KS 4.3 | 0.240 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.010 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.400 | mg/L | | |
| Tbew | 8.700 | °C | | |
| c(O2) | 2.700 | mg/L | | |
| c(Na) | 0.505 | mmol/L | ß(Na) | 11.600 mg/L |
| c(K) | 0.038 | mmol/L | ß(K) | 1.500 mg/L |
| c(Ca) | 0.177 | mmol/L | ß(Ca) | 7.100 mg/L |
| c(Mg) | 0.074 | mmol/L | ß(Mg) | 1.800 mg/L |
| c(Cl) | 0.649 | mmol/L | ß(Cl) | 23.000 mg/L |
| c(NO3) | 0.037 | mmol/L | ß(NO3) | 2.300 mg/L |
| c(SO4) | 0.083 | mmol/L | ß(SO4) | 8.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.006 | mmol/L | ß(NH4) | 0.100 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 0.251 | mmol/L | | 1.408 °dH |
| O2-Bedarf | 0.011 | mmol/L | | 0.356 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 1.051 | mmol/L |
| Summe der negativen Ladungen, S- | | | 1.042 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.9 | % |

m-Wert aus der Ladungsbilanz 0.193 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.188 | 0.188 | 0.201 | mmol/L |
| c(DIC) | 1.203 | 1.135 | 1.217 | mmol/L |
| p-Wert | -1.015 | -0.948 | -1.015 | mmol/L |
| Anionen | 1.036 | 1.036 | 1.050 | mmol/L |
| Kationen | 1.048 | 1.048 | 1.048 | mmol/L |
| pH(T) | 5.730 | | | |
| pH(T) mess | 5.760 | | | |
| KS4.3 | | | 0.253 | mmol/L |
| KS4.3 mess | | | 0.240 | mmol/L |
| KB8.2 | | 0.943 | | mmol/L |
| KB8.2 mess | | 1.010 | | mmol/L |
| Tbew | 8.700 | 8.700 | 8.700 | °C |
| pH(Tbew) | 5.730 | 5.760 | 5.760 | Diff. < 0,05 |
| pH A | 10.056 | 10.056 | 9.962 | |
| SI(CaCO3) | -3.942 | -3.912 | -3.882 | |
| pHc(CaCO3) | 7.897 | 7.941 | 7.895 | |
| IOS rech | 1.371 | 1.371 | 1.378 | mmol/L |
| Dc(CaCO3) | 0.954 | 0.897 | 0.953 | mmol/L |
| Dc(CaCO3) | 95.477 | 89.792 | 95.405 | mg/L |

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Zusammen mit Analysenbeispiel 17: Ionenaustausch
Calcium gegen Natrium

15.08.2013 09:28:55

Buch, Analysenbeispiel 16

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 9.080 | | | |
| T | 14.600 | °C | | |
| k | 61.700 | mS/m (25°C) | | |
| KS 4.3 | 6.020 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.000 | mmol/L | | |
| KS 8.2 | 0.440 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.700 | mg/L | | |
| Tbew | 14.600 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 5.676 | mmol/L | ß(Na) | 130.500 mg/L |
| c(K) | 0.043 | mmol/L | ß(K) | 1.700 mg/L |
| c(Ca) | 0.429 | mmol/L | ß(Ca) | 17.200 mg/L |
| c(Mg) | 0.399 | mmol/L | ß(Mg) | 9.700 mg/L |
| c(Cl) | 0.451 | mmol/L | ß(Cl) | 16.000 mg/L |
| c(NO3) | 0.002 | mmol/L | ß(NO3) | 0.100 mg/L |
| c(SO4) | 0.281 | mmol/L | ß(SO4) | 27.000 mg/L |
| c(PO4) | 0.001 | mmol/L | ß(PO4) | 0.090 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 0.828 | mmol/L | | 4.644 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 7.375 | mmol/L |
| Summe der negativen Ladungen, S- | | | 6.987 | mmol/L |
| (S- - S+) / S+ *100 | | | 5.4 | % > 5 % !!! |

m-Wert aus der Ladungsbilanz 6.360 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 5.966 | 5.966 | 6.547 | mmol/L |
| c(DIC) | 5.530 | 5.568 | 6.114 | mmol/L |
| p-Wert | 0.435 | 0.397 | 0.433 | mmol/L |
| Anionen | 6.708 | 6.723 | 7.289 | mmol/L |
| Kationen | 7.102 | 7.118 | 7.102 | mmol/L |
| pH(T) | 9.125 | | | |
| pH(T) mess | 9.080 | | | |
| KS4.3 | | | 6.602 | mmol/L |
| KS4.3 mess | | | 6.020 | mmol/L |
| KB8.2 | | -0.402 | | mmol/L |
| KB8.2 mess | | -0.440 | | mmol/L |
| Tbew | 14.600 | 14.600 | 14.600 | °C |
| pH(Tbew) | 9.125 | 9.080 | 9.078 | Diff. < 0,05 |
| pH A | 7.841 | 7.841 | 7.805 | |
| SI(CaCO3) | 1.151 | 1.118 | 1.147 | |
| pHc(CaCO3) | 8.616 | 8.539 | 8.580 | |
| IOS rech | 8.177 | 8.172 | 8.468 | mmol/L |
| Dc(CaCO3) | -0.343 | -0.329 | -0.344 | mmol/L |
| Dc(CaCO3) | -34.352 | -32.896 | -34.453 | mg/L |

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Buch, Analysenbeispiel 17

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 9.070 | | | |
| T | 13.500 | °C | | |
| k | 126.900 | mS/m (25°C) | | |
| KS 4.3 | 12.900 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.000 | mmol/L | | |
| KS 8.2 | 0.750 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.600 | mg/L | | |
| Tbew | 13.500 | °C | | |
| c(O2) | 0.000 | mg/L | | |
| c(Na) | 13.310 | mmol/L | ß(Na) | 306.000 mg/L |
| c(K) | 0.046 | mmol/L | ß(K) | 1.800 mg/L |
| c(Ca) | 0.050 | mmol/L | ß(Ca) | 2.000 mg/L |
| c(Mg) | 0.002 | mmol/L | ß(Mg) | 0.060 mg/L |
| c(Cl) | 0.592 | mmol/L | ß(Cl) | 21.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 0.135 | mmol/L | ß(SO4) | 13.000 mg/L |
| c(PO4) | 0.004 | mmol/L | ß(PO4) | 0.420 mg/L |
| c(NH4) | 0.025 | mmol/L | ß(NH4) | 0.450 mg/L |
| c(Fe II) | 0.001 | mmol/L | ß(Fe) | 0.080 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 0.052 | mmol/L | | 0.292 °dH |
| O2-Bedarf | 0.050 | mmol/L | | 1.611 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 13.487 | mmol/L |
| Summe der negativen Ladungen, S- | | | 13.720 | mmol/L |
| (S- - S+) / S+ *100 | | | 1.7 | % |

m-Wert aus der Ladungsbilanz 12.598 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 12.848 | 12.848 | 13.381 | mmol/L |
| c(DIC) | 12.133 | 12.164 | 12.668 | mmol/L |
| p-Wert | 0.715 | 0.684 | 0.713 | mmol/L |
| Anionen | 13.681 | 13.681 | 14.214 | mmol/L |
| Kationen | 13.458 | 13.459 | 13.458 | mmol/L |
| pH(T) | 9.090 | | | |
| pH(T) mess | 9.070 | | | |
| KS4.3 | | | 13.433 | mmol/L |
| KS4.3 mess | | | 12.900 | mmol/L |
| KB8.2 | | -0.719 | | mmol/L |
| KB8.2 mess | | -0.750 | | mmol/L |
| Tbew | 13.500 | 13.500 | 13.500 | °C |
| pH(Tbew) | 9.090 | 9.070 | 9.070 | Diff. < 0,05 |
| pH A | 8.573 | 8.573 | 8.558 | |
| SI(CaCO3) | 0.403 | 0.389 | 0.400 | |
| pHc(CaCO3) | 9.077 | 9.057 | 9.057 | |
| IOS rech | 14.455 | 14.427 | 14.723 | mmol/L |
| Dc(CaCO3) | -0.030 | -0.029 | -0.030 | mmol/L |
| Dc(CaCO3) | -2.982 | -2.915 | -2.968 | mg/L |

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Buch, Analysenbeispiel 18

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 7.350 | | | |
| T | 11.600 | °C | | |
| k | 156.200 | mS/m (25°C) | | |
| KS 4.3 | 3.900 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.410 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 11.600 | °C | | |
| c(O2) | 1.600 | mg/L | | |
| c(Na) | 5.959 | mmol/L | ß(Na) | 137.000 mg/L |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 mg/L |
| c(Ca) | 2.645 | mmol/L | ß(Ca) | 106.000 mg/L |
| c(Mg) | 3.662 | mmol/L | ß(Mg) | 89.000 mg/L |
| c(Cl) | 10.012 | mmol/L | ß(Cl) | 355.000 mg/L |
| c(NO3) | 0.258 | mmol/L | ß(NO3) | 16.000 mg/L |
| c(SO4) | 2.250 | mmol/L | ß(SO4) | 216.000 mg/L |
| c(PO4) | 0.014 | mmol/L | ß(PO4) | 1.300 mg/L |
| c(NH4) | 0.078 | mmol/L | ß(NH4) | 1.400 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.004 | mmol/L | ß(Mn) | 0.200 mg/L |
| Härte | 6.307 | mmol/L | | 35.373 °dH |
| O2-Bedarf | 0.157 | mmol/L | | 5.036 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 18.659 | mmol/L |
| Summe der negativen Ladungen, S- | | | 18.643 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.1 | % |

m-Wert aus der Ladungsbilanz 3.803 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 3.852 | 3.852 | 3.482 | mmol/L |
| c(DIC) | 4.165 | 4.207 | 3.800 | mmol/L |
| p-Wert | -0.313 | -0.355 | -0.318 | mmol/L |
| Anionen | 17.538 | 17.540 | 17.179 | mmol/L |
| Kationen | 17.575 | 17.577 | 17.586 | mmol/L |
| pH(T) | 7.397 | | | |
| pH(T) mess | 7.350 | | | |
| KS4.3 | | | 3.529 | mmol/L |
| KS4.3 mess | | | 3.900 | mmol/L |
| KB8.2 | | 0.453 | | mmol/L |
| KB8.2 mess | | 0.410 | | mmol/L |
| Tbew | 11.600 | 11.600 | 11.600 | °C |
| pH(Tbew) | 7.397 | 7.350 | 7.350 | Diff. < 0,05 |
| pH A | 7.440 | 7.440 | 7.483 | |
| SI(CaCO3) | -0.042 | -0.089 | -0.131 | |
| pHc(CaCO3) | 7.431 | 7.420 | 7.455 | |
| IOS rech | 25.057 | 25.059 | 24.891 | mmol/L |
| Dc(CaCO3) | 0.024 | 0.053 | 0.070 | mmol/L |
| Dc(CaCO3) | 2.409 | 5.282 | 6.998 | mg/L |

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Buch, Analysenbeispiel 19

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 7.950 | | | |
| T | 6.800 | °C | | |
| k | 91.400 | mS/m (25°C) | | |
| KS 4.3 | 3.370 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.100 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 2.600 | mg/L | | |
| Tbew | 6.800 | °C | | |
| c(O2) | 10.100 | mg/L | | |
| c(Na) | 2.088 | mmol/L | ß(Na) | 48.000 mg/L |
| c(K) | 0.128 | mmol/L | ß(K) | 5.000 mg/L |
| c(Ca) | 2.520 | mmol/L | ß(Ca) | 101.000 mg/L |
| c(Mg) | 0.782 | mmol/L | ß(Mg) | 19.000 mg/L |
| c(Cl) | 2.454 | mmol/L | ß(Cl) | 87.000 mg/L |
| c(NO3) | 0.387 | mmol/L | ß(NO3) | 24.000 mg/L |
| c(SO4) | 1.417 | mmol/L | ß(SO4) | 136.000 mg/L |
| c(PO4) | 0.003 | mmol/L | ß(PO4) | 0.290 mg/L |
| c(NH4) | 0.016 | mmol/L | ß(NH4) | 0.280 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.003 | mmol/L | ß(Mn) | 0.170 mg/L |
| Härte | 3.302 | mmol/L | | 18.519 °dH |
| O2-Bedarf | 0.033 | mmol/L | | 1.045 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 8.842 | mmol/L |
| Summe der negativen Ladungen, S- | | | 9.001 | mmol/L |
| (S- - S+) / S+ *100 | | | 1.8 | % |

m-Wert aus der Ladungsbilanz 3.145 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 3.314 | 3.314 | 3.105 | mmol/L |
| c(DIC) | 3.374 | 3.380 | 3.166 | mmol/L |
| p-Wert | -0.060 | -0.066 | -0.062 | mmol/L |
| Anionen | 8.425 | 8.427 | 8.222 | mmol/L |
| Kationen | 8.279 | 8.280 | 8.284 | mmol/L |
| pH(T) | 7.972 | | | |
| pH(T) mess | 7.950 | | | |
| KS4.3 | | | 3.160 | mmol/L |
| KS4.3 mess | | | 3.370 | mmol/L |
| KB8.2 | | 0.107 | | mmol/L |
| KB8.2 mess | | 0.100 | | mmol/L |
| Tbew | 6.800 | 6.800 | 6.800 | °C |
| pH(Tbew) | 7.972 | 7.950 | 7.951 | Diff. < 0,05 |
| pH A | 7.510 | 7.510 | 7.538 | |
| SI(CaCO3) | 0.456 | 0.434 | 0.408 | |
| pHc(CaCO3) | 7.572 | 7.570 | 7.592 | |
| IOS rech | 12.541 | 12.543 | 12.444 | mmol/L |
| Dc(CaCO3) | -0.144 | -0.139 | -0.121 | mmol/L |
| Dc(CaCO3) | -14.381 | -13.911 | -12.109 | mg/L |

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C:\Program Files\CAS\BUCH_20.cas

Talsperrenwasser "ROH"

15.08.2013 17:27:20

Buch, Analysenbeispiel 20

| | | | | |
|---|--------|-------------|--------|-------------|
| pH(T) | 7.630 | | | |
| T | 3.600 | °C | | |
| k | 14.000 | mS/m (25°C) | | |
| KS 4.3 | 0.520 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.040 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 1.700 | mg/L | | |
| Tbew | 3.600 | °C | | |
| c(O2) | 12.900 | mg/L | | |
| c(Na) | 0.226 | mmol/L | ß(Na) | 5.200 mg/L |
| c(K) | 0.023 | mmol/L | ß(K) | 0.900 mg/L |
| c(Ca) | 0.322 | mmol/L | ß(Ca) | 12.900 mg/L |
| c(Mg) | 0.144 | mmol/L | ß(Mg) | 3.500 mg/L |
| c(Cl) | 0.212 | mmol/L | ß(Cl) | 7.500 mg/L |
| c(NO3) | 0.069 | mmol/L | ß(NO3) | 4.300 mg/L |
| c(SO4) | 0.235 | mmol/L | ß(SO4) | 22.600 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.011 mg/L |
| Härte | 0.466 | mmol/L | | 2.614 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.003 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 1.181 | mmol/L |
| Summe der negativen Ladungen, S- | | | 1.221 | mmol/L |
| (S- - S+) / S+ *100 | | | 3.3 | % |
| m-Wert aus der Ladungsbilanz | | | 0.430 | mmol/L |

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.467 | 0.467 | 0.561 | mmol/L |
| c(DIC) | 0.508 | 0.501 | 0.602 | mmol/L |
| p-Wert | -0.041 | -0.034 | -0.041 | mmol/L |
| Anionen | 1.195 | 1.195 | 1.288 | mmol/L |
| Kationen | 1.158 | 1.158 | 1.157 | mmol/L |
| pH(T) | 7.557 | | | |
| pH(T) mess | 7.630 | | | |
| KS4.3 | | | 0.614 | mmol/L |
| KS4.3 mess | | | 0.520 | mmol/L |
| KB8.2 | | 0.033 | | mmol/L |
| KB8.2 mess | | 0.040 | | mmol/L |
| Tbew | 3.600 | 3.600 | 3.600 | °C |
| pH(Tbew) | 7.557 | 7.630 | 7.629 | Diff. > 0,05 |
| pH A | 9.188 | 9.188 | 9.100 | |
| SI(CaCO3) | -1.574 | -1.501 | -1.424 | |
| pHc(CaCO3) | 8.994 | 9.011 | 8.927 | |
| IOS rech | 1.855 | 1.855 | 1.901 | mmol/L |
| Dc(CaCO3) | 0.063 | 0.057 | 0.062 | mmol/L |
| Dc(CaCO3) | 6.286 | 5.675 | 6.252 | mg/L |

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Talsperrenwasser "REIN"

15.08.2013 17:39:38

Buch, Analysenbeispiel 21

| | | | | |
|---|--------|-------------|--------|-------------|
| pH(T) | 8.950 | | | |
| T | 3.600 | °C | | |
| k | 16.500 | mS/m (25°C) | | |
| KS 4.3 | 0.580 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.000 | mmol/L | | |
| KS 8.2 | 0.020 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.900 | mg/L | | |
| Tbew | 3.600 | °C | | |
| c(O2) | 13.200 | mg/L | | |
| c(Na) | 0.231 | mmol/L | ß(Na) | 5.300 mg/L |
| c(K) | 0.020 | mmol/L | ß(K) | 0.800 mg/L |
| c(Ca) | 0.422 | mmol/L | ß(Ca) | 16.900 mg/L |
| c(Mg) | 0.136 | mmol/L | ß(Mg) | 3.300 mg/L |
| c(Cl) | 0.214 | mmol/L | ß(Cl) | 7.600 mg/L |
| c(NO3) | 0.069 | mmol/L | ß(NO3) | 4.300 mg/L |
| c(SO4) | 0.327 | mmol/L | ß(SO4) | 31.400 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 0.558 | mmol/L | | 3.130 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 1.367 | mmol/L |
| Summe der negativen Ladungen, S- | | | 1.467 | mmol/L |
| (S- - S+) / S+ *100 | | | 7.1 | % |
| m-Wert aus der Ladungsbilanz | | | 0.430 | mmol/L |

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.526 | 0.526 | 0.573 | mmol/L |
| c(DIC) | 0.507 | 0.508 | 0.554 | mmol/L |
| p-Wert | 0.020 | 0.018 | 0.019 | mmol/L |
| Anionen | 1.417 | 1.417 | 1.464 | mmol/L |
| Kationen | 1.321 | 1.321 | 1.320 | mmol/L |
| pH(T) | 8.984 | | | |
| pH(T) mess | 8.950 | | | |
| KS4.3 | | | 0.627 | mmol/L |
| KS4.3 mess | | | 0.580 | mmol/L |
| KB8.2 | | -0.018 | | mmol/L |
| KB8.2 mess | | -0.020 | | mmol/L |
| Tbew | 3.600 | 3.600 | 3.600 | °C |
| pH(Tbew) | 8.984 | 8.950 | 8.948 | Diff. < 0,05 |
| pH A | 9.015 | 9.015 | 8.975 | |
| SI(CaCO3) | -0.029 | -0.060 | -0.025 | |
| pHc(CaCO3) | 9.011 | 9.007 | 8.972 | |
| IOS rech | 2.227 | 2.227 | 2.250 | mmol/L |
| Dc(CaCO3) | 0.001 | 0.003 | 0.001 | mmol/L |
| Dc(CaCO3) | 0.149 | 0.302 | 0.132 | mg/L |

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*Analysenbeispiel 22: Rheinuferfiltrat "ROH"
vom 20.12.1966: zu wenig Daten für Rechnung,
Beispiel 23: aufbereitetes Rheinuferfiltrat*

15.08.2013 18:12:21

Buch, Analysenbeispiel 23

| | | | | |
|---|--------|-------------|--------------------|-------------|
| pH(T) | 7.300 | | | |
| T | 10.000 | °C |(willkürlich) | |
| k | 0.000 | mS/m (25°C) | | |
| KS 4.3 | 3.360 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.430 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 10.000 | °C | | |
| c(O2) | 7.200 | mg/L | | |
| c(Na) | 2.031 | mmol/L | ß(Na) | 46.700 mg/L |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 mg/L |
| c(Ca) | 2.280 | mmol/L | ß(Ca) | 91.400 mg/L |
| c(Mg) | 0.531 | mmol/L | ß(Mg) | 12.900 mg/L |
| c(Cl) | 2.031 | mmol/L | ß(Cl) | 72.000 mg/L |
| c(NO3) | 0.516 | mmol/L | ß(NO3) | 32.000 mg/L |
| c(SO4) | 0.875 | mmol/L | ß(SO4) | 84.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.003 | mmol/L | ß(NH4) | 0.050 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 2.811 | mmol/L | | 15.766 °dH |
| O2-Bedarf | 0.006 | mmol/L | | 0.178 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 7.656 | mmol/L |
| Summe der negativen Ladungen, S- | | | 7.607 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.6 | % |

m-Wert aus der Ladungsbilanz 3.356 mmol/L

| | | | | |
|------------|--------|--------|--------|--------------|
| | KS 4.3 | KS 4.3 | KB 8.2 | |
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 3.303 | 3.303 | 3.174 | mmol/L |
| c(DIC) | 3.701 | 3.718 | 3.574 | mmol/L |
| p-Wert | -0.399 | -0.416 | -0.400 | mmol/L |
| Anionen | 7.250 | 7.251 | 7.124 | mmol/L |
| Kationen | 7.307 | 7.307 | 7.309 | mmol/L |
| pH(T) | 7.317 | | | |
| pH(T) mess | 7.300 | | | |
| KS4.3 | | | 3.231 | mmol/L |
| KS4.3 mess | | | 3.360 | mmol/L |
| KB8.2 | | 0.447 | | mmol/L |
| KB8.2 mess | | 0.430 | | mmol/L |
| Tbew | 10.000 | 10.000 | 10.000 | °C |
| pH(Tbew) | 7.317 | 7.300 | 7.300 | Diff. < 0,05 |
| pH A | 7.474 | 7.474 | 7.490 | |
| SI(CaCO3) | -0.155 | -0.173 | -0.189 | |
| pHc(CaCO3) | 7.438 | 7.433 | 7.447 | |
| IOS rech | 10.622 | 10.622 | 10.562 | mmol/L |
| Dc(CaCO3) | 0.086 | 0.097 | 0.102 | mmol/L |
| Dc(CaCO3) | 8.615 | 9.758 | 10.232 | mg/L |

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Zusammen mit Analysenbeispiel 25: Aufbereitung
durch Teilentcarbonisierung mit Kalkhydrat

17.08.2013 18:22:34

Buch, Analysenbeispiel 24

| | | | | |
|---|---------|-------------|--------|--------------|
| pH(T) | 7.080 | | | |
| T | 9.500 | °C | | |
| k | 141.000 | mS/m (25°C) | | |
| KS 4.3 | 7.280 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 1.490 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 1.600 | mg/L | | |
| Tbew | 9.500 | °C | | |
| c(O2) | 0.100 | mg/L | | |
| c(Na) | 1.479 | mmol/L | ß(Na) | 34.000 mg/L |
| c(K) | 0.056 | mmol/L | ß(K) | 2.200 mg/L |
| c(Ca) | 5.938 | mmol/L | ß(Ca) | 238.000 mg/L |
| c(Mg) | 0.864 | mmol/L | ß(Mg) | 21.000 mg/L |
| c(Cl) | 2.595 | mmol/L | ß(Cl) | 92.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 2.646 | mmol/L | ß(SO4) | 254.000 mg/L |
| c(PO4) | 0.001 | mmol/L | ß(PO4) | 0.070 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.017 | mmol/L | ß(Fe) | 0.970 mg/L |
| c(Mn II) | 0.012 | mmol/L | ß(Mn) | 0.660 mg/L |
| Härte | 6.802 | mmol/L | | 38.149 °dH |
| O2-Bedarf | 0.010 | mmol/L | | 0.331 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 15.197 | mmol/L |
| Summe der negativen Ladungen, S- | | | 15.119 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.5 | % |

m-Wert aus der Ladungsbilanz 7.252 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|---------|---------|---------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 7.219 | 7.219 | 6.631 | mmol/L |
| c(DIC) | 8.532 | 8.659 | 7.954 | mmol/L |
| p-Wert | -1.313 | -1.440 | -1.324 | mmol/L |
| Anionen | 13.526 | 13.527 | 12.952 | mmol/L |
| Kationen | 13.617 | 13.619 | 13.631 | mmol/L |
| pH(T) | 7.119 | | | |
| pH(T) mess | 7.080 | | | |
| KS4.3 | | | 6.691 | mmol/L |
| KS4.3 mess | | | 7.280 | mmol/L |
| KB8.2 | | 1.619 | | mmol/L |
| KB8.2 mess | | 1.490 | | mmol/L |
| Tbew | 9.500 | 9.500 | 9.500 | °C |
| pH(Tbew) | 7.119 | 7.080 | 7.080 | Diff. < 0,05 |
| pH A | 6.840 | 6.840 | 6.875 | |
| SI(CaCO3) | 0.278 | 0.239 | 0.204 | |
| pHc(CaCO3) | 6.930 | 6.919 | 6.940 | |
| IOS rech | 21.484 | 21.485 | 21.215 | mmol/L |
| Dc(CaCO3) | -0.476 | -0.423 | -0.335 | mmol/L |
| Dc(CaCO3) | -47.615 | -42.316 | -33.492 | mg/L |

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17.08.2013 18:27:53

Buch, Analysenbeispiel 25

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 8.570 | | | |
| T | 10.100 | °C | | |
| k | 89.500 | mS/m (25°C) | | |
| KS 4.3 | 0.890 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.000 | mmol/L | | |
| KS 8.2 | 0.020 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 1.600 | mg/L | | |
| Tbew | 10.100 | °C | | |
| c(O2) | 6.800 | mg/L | | |
| c(Na) | 1.479 | mmol/L | ß(Na) | 34.000 mg/L |
| c(K) | 0.066 | mmol/L | ß(K) | 2.600 mg/L |
| c(Ca) | 2.595 | mmol/L | ß(Ca) | 104.000 mg/L |
| c(Mg) | 0.823 | mmol/L | ß(Mg) | 20.000 mg/L |
| c(Cl) | 2.595 | mmol/L | ß(Cl) | 92.000 mg/L |
| c(NO3) | 0.024 | mmol/L | ß(NO3) | 1.500 mg/L |
| c(SO4) | 2.489 | mmol/L | ß(SO4) | 239.000 mg/L |
| c(PO4) | 0.000 | mmol/L | ß(PO4) | 0.000 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 3.418 | mmol/L | | 19.170 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 8.381 | mmol/L |
| Summe der negativen Ladungen, S- | | | 8.437 | mmol/L |
| (S- - S+) / S+ *100 | | | 0.7 | % |

m-Wert aus der Ladungsbilanz 0.784 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 0.828 | 0.828 | 0.999 | mmol/L |
| c(DIC) | 0.799 | 0.802 | 0.968 | mmol/L |
| p-Wert | 0.029 | 0.026 | 0.030 | mmol/L |
| Anionen | 7.540 | 7.542 | 7.706 | mmol/L |
| Kationen | 7.496 | 7.498 | 7.491 | mmol/L |
| pH(T) | 8.612 | | | |
| pH(T) mess | 8.570 | | | |
| KS4.3 | | | 1.059 | mmol/L |
| KS4.3 mess | | | 0.890 | mmol/L |
| KB8.2 | | -0.017 | | mmol/L |
| KB8.2 mess | | -0.020 | | mmol/L |
| Tbew | 10.100 | 10.100 | 10.100 | °C |
| pH(Tbew) | 8.612 | 8.570 | 8.569 | Diff. < 0,05 |
| pH A | 8.072 | 8.072 | 7.990 | |
| SI(CaCO3) | 0.513 | 0.474 | 0.554 | |
| pHc(CaCO3) | 8.114 | 8.110 | 8.034 | |
| IOS rech | 12.572 | 12.574 | 12.652 | mmol/L |
| Dc(CaCO3) | -0.033 | -0.030 | -0.041 | mmol/L |
| Dc(CaCO3) | -3.297 | -2.986 | -4.104 | mg/L |

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Zusammen mit Analysenbeispiel 27: Das Wasserwerk
Fuhrberg 1969

17.08.2013 18:35:24

Buch, Analysenbeispiel 26

| | | | | | |
|---|--------|-------------|--------|---------|--------------------------------|
| pH(T) | 6.570 | | | | |
| T | 10.000 | °C | | | |
| k | 53.600 | mS/m (25°C) | | | |
| KS 4.3 | 1.750 | mmol/L | | | |
| Ttit 4.3 | 20.000 | °C | | | |
| KB 8.2 | 1.220 | mmol/L | | | |
| KS 8.2 | 0.000 | mmol/L | | | |
| Ttit 8.2 | 20.000 | °C | | | |
| DIC | 0.000 | mmol/L | | | |
| TOC | 0.000 | mg/L | | | |
| Tbew | 10.000 | °C | | | |
| c(O2) | 0.000 | mg/L | | | |
| c(Na) | 0.783 | mmol/L | ß(Na) | 18.000 | mg/L (abgeschätzt aus Chlorid) |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 | mg/L |
| c(Ca) | 1.697 | mmol/L | ß(Ca) | 68.000 | mg/L |
| c(Mg) | 0.267 | mmol/L | ß(Mg) | 6.500 | mg/L |
| c(Cl) | 0.790 | mmol/L | ß(Cl) | 28.000 | mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 | mg/L |
| c(SO4) | 1.052 | mmol/L | ß(SO4) | 101.000 | mg/L |
| c(PO4) | 0.008 | mmol/L | ß(PO4) | 0.800 | mg/L |
| c(NH4) | 0.033 | mmol/L | ß(NH4) | 0.600 | mg/L |
| c(Fe II) | 0.260 | mmol/L | ß(Fe) | 14.500 | mg/L |
| c(Mn II) | 0.016 | mmol/L | ß(Mn) | 0.900 | mg/L |
| Härte | 1.964 | mmol/L | | 11.015 | °dH |
| O2-Bedarf | 0.140 | mmol/L | | 4.471 | mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | | |
| Summe der positiven Ladungen, S+ | | | | 5.296 | mmol/L |
| Summe der negativen Ladungen, S- | | | | 4.604 | mmol/L |
| (S- - S+) / S+ *100 | | | | 14.0 | % > 5 % !!! |

m-Wert aus der Ladungsbilanz 1.817 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 1.700 | 1.700 | 1.714 | mmol/L |
| c(DIC) | 2.888 | 2.879 | 2.902 | mmol/L |
| p-Wert | -1.188 | -1.179 | -1.188 | mmol/L |
| Anionen | 4.295 | 4.295 | 4.308 | mmol/L |
| Kationen | 4.997 | 4.997 | 4.996 | mmol/L |
| pH(T) | 6.567 | | | |
| pH(T) mess | 6.570 | | | |
| KS4.3 | | | 1.762 | mmol/L |
| KS4.3 mess | | | 1.750 | mmol/L |
| KB8.2 | | 1.211 | | mmol/L |
| KB8.2 mess | | 1.220 | | mmol/L |
| Tbew | 10.000 | 10.000 | 10.000 | °C |
| pH(Tbew) | 6.567 | 6.570 | 6.570 | Diff. < 0,05 |
| pH A | 7.870 | 7.870 | 7.867 | |
| SI(CaCO3) | -1.296 | -1.292 | -1.289 | |
| pHc(CaCO3) | 7.407 | 7.409 | 7.406 | |
| IOS rech | 7.641 | 7.641 | 7.647 | mmol/L |
| Dc(CaCO3) | 0.868 | 0.862 | 0.867 | mmol/L |
| Dc(CaCO3) | 86.911 | 86.296 | 86.736 | mg/L |

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17.08.2013 21:57:05

Buch, Analysenbeispiel 27

| | | | | |
|---|--------|-------------|--------|--------------|
| pH(T) | 7.640 | | | |
| T | 10.000 | °C | | |
| k | 57.500 | mS/m (25°C) | | |
| KS 4.3 | 1.600 | mmol/L | | |
| Ttit 4.3 | 20.000 | °C | | |
| KB 8.2 | 0.090 | mmol/L | | |
| KS 8.2 | 0.000 | mmol/L | | |
| Ttit 8.2 | 20.000 | °C | | |
| DIC | 0.000 | mmol/L | | |
| TOC | 0.000 | mg/L | | |
| Tbew | 10.000 | °C | | |
| c(O2) | 10.900 | mg/L | | |
| c(Na) | 0.783 | mmol/L | ß(Na) | 18.000 mg/L |
| c(K) | 0.000 | mmol/L | ß(K) | 0.000 mg/L |
| c(Ca) | 2.136 | mmol/L | ß(Ca) | 85.600 mg/L |
| c(Mg) | 0.267 | mmol/L | ß(Mg) | 6.500 mg/L |
| c(Cl) | 1.297 | mmol/L | ß(Cl) | 46.000 mg/L |
| c(NO3) | 0.000 | mmol/L | ß(NO3) | 0.000 mg/L |
| c(SO4) | 1.062 | mmol/L | ß(SO4) | 102.000 mg/L |
| c(PO4) | 0.062 | mmol/L | ß(PO4) | 5.900 mg/L |
| c(NH4) | 0.000 | mmol/L | ß(NH4) | 0.000 mg/L |
| c(Fe II) | 0.000 | mmol/L | ß(Fe) | 0.000 mg/L |
| c(Mn II) | 0.000 | mmol/L | ß(Mn) | 0.000 mg/L |
| Härte | 2.403 | mmol/L | | 13.477 °dH |
| O2-Bedarf | 0.000 | mmol/L | | 0.000 mg/L |
| Ladungsbilanz, LB [ohne Komplexbildung] | | | | |
| Summe der positiven Ladungen, S+ | | | 5.589 | mmol/L |
| Summe der negativen Ladungen, S- | | | 5.080 | mmol/L |
| (S- - S+) / S+ *100 | | | 9.5 | % > 5 % !!! |

m-Wert aus der Ladungsbilanz 2.168 mmol/L

| | KS 4.3 | KS 4.3 | KB 8.2 | |
|------------|--------|--------|--------|--------------|
| | KB 8.2 | pH(T) | pH(T) | |
| m-Wert | 1.604 | 1.604 | 1.199 | mmol/L |
| c(DIC) | 1.545 | 1.569 | 1.142 | mmol/L |
| p-Wert | 0.060 | 0.035 | 0.057 | mmol/L |
| Anionen | 4.633 | 4.638 | 4.238 | mmol/L |
| Kationen | 5.197 | 5.201 | 5.206 | mmol/L |
| pH(T) | 7.748 | | | |
| pH(T) mess | 7.640 | | | |
| KS4.3 | | | 1.194 | mmol/L |
| KS4.3 mess | | | 1.600 | mmol/L |
| KB8.2 | | 0.115 | | mmol/L |
| KB8.2 mess | | 0.090 | | mmol/L |
| Tbew | 10.000 | 10.000 | 10.000 | °C |
| pH(Tbew) | 7.748 | 7.640 | 7.640 | Diff. > 0,05 |
| pH A | 7.833 | 7.833 | 7.973 | |
| SI(CaCO3) | -0.083 | -0.188 | -0.323 | |
| pHc(CaCO3) | 7.822 | 7.807 | 7.930 | |
| IOS rech | 8.049 | 8.053 | 7.860 | mmol/L |
| Dc(CaCO3) | 0.014 | 0.034 | 0.043 | mmol/L |
| Dc(CaCO3) | 1.389 | 3.450 | 4.350 | mg/L |