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**Lithological control on fracture cementation in the Keuper Marl (Triassic), north Somerset, UK**

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Supplementary Material

Table S1 Elemental concentrations (ppm) of gypsum nodules, fault veins and veins from red marls. See sample locations in Fig. 2B.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Nodule****1** | **Nodule****2** | **Fault vein** **1** | **Fault vein****2** | **Vein** **1** | **Vein** **2** | **Vein** **3** |
|  |  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** |
| **Al** | 2.074 | 0.480 | 6.595 | 8.687 | 27.938 | 7.702 | 8.841 | 30.369 | 31.718 | 9.801 | 6.041 | 12.708 | 15.069 | 13.939 | 5.869 | 5.376 | 0.095 | 39.692 | 6.551 | 4.441 |  |
| **Ba** | 7.139 | 0.204 | 0.324 | 0.363 | 0.747 | 0.200 | 0.152 | 0.518 | 0.849 | 0.389 | 0.590 | 0.751 | 0.189 | 0.233 | 0.142 | 0.192 | 0.011 | 0.716 | 0.079 | 0.104 | 0.551 |
| **Cr** | 0.034 | 0.591 | 9.206 | 0.668 | 0.248 | 0.443 | 0.901 | 1.707 | 0.999 | 1.339 | 8.509 | 1.403 | 1.205 | 1.201 | 0.595 |  | 0.650 | 0.663 | 0.353 | 0.059 | 0.364 |
| **Cu** | 0.511 | 1.263 | 5.263 | 0.098 | 0.418 | 0.228 | 0.202 | 0.125 | 0.293 | 0.232 | 1.740 | 5.944 | 0.237 | 0.113 | 0.067 | 0.633 | 0.079 | 0.219 | 0.093 | 0.425 | 0.127 |
| **Fe** | 24.680 | 36.513 | 31.277 | 24.665 | 28.609 | 23.464 | 32.877 | 25.750 | 28.093 | 25.840 | 20.973 | 34.479 | 21.915 | 32.807 | 22.897 | 22.068 | 32.608 | 30.643 | 28.007 | 24.095 | 34.722 |
| **Mg** | 3.358 | 2.154 | 4.788 | 2.295 | 9.754 | 3.036 | 3.007 | 9.257 | 6.335 | 3.488 | 3.378 | 6.464 | 6.1484 | 7.721 | 4.665 | 3.374 | 2.445 | 19.769 | 5.235 | 2.607 | 12.465 |
| **Mn** | 0.832 | 0.402 | 5.403 | 0.079 | 1.579 | 0.956 | 1.332 | 0.608 | 0.585 | 1.298 | 16.951 | 17.000 | 1.142 | 0.205 |  | 1.186 | 0.044 | 0.506 | 0.109 | 1.615 | 0.378 |
| **Na** | 23.768 | 12.977 | 11.455 | 5.229 | 6.415 | 1.736 | 2.548 | 3.606 | 4.877 | 2.583 | 2.144 | 7.093 | 7.368 | 22.106 | 12.059 | 15.404 | 23.655 | 67.503 | 11.699 | 4.197 | 7.019 |
| **Ni** | 7.929 | 9.008 | 13.829 | 5.811 | 6.910 | 7.582 | 8.732 | 6.566 | 4.654 | 6.419 | 10.416 | 12.234 | 7.565 | 10.972 | 8.350 | 10.113 | 6.313 | 5.319 | 5.380 | 6.830 | 7.936 |
| **Pb** | 0.074 | 0.062 | 0.236 |  | 1.148 | 0.072 | 0.392 | 0.095 | 0.159 | 0.178 | 1.003 | 0.484 | 0.047 | 0.019 | 0.015 | 0.046 |  | 0.132 |  | 0.047 | 0.140 |
| **Rb** | 0.167 | 0.052 | 0.393 | 0.397 | 1.471 | 0.414 | 0.320 | 1.368 | 2.218 | 0.796 | 0.402 | 0.407 | 0.445 | 0.405 | 0.323 | 0.319 | 0.055 | 1.719 | 0.308 | 0.345 | 1.115 |
| **Ru** | 0.360 | 0.268 | 0.055 | 0.028 | 0.024 | 0.032 | 0.028 | 0.023 | 0.029 | 0.026 | 0.039 | 0.032 | 0.029 | 0.022 | 0.029 | 0.042 | 0.023 | 0.022 | 0.021 | 0.052 | 0.031 |
| **Sr** | 1463.544 | 1420.214 | 170.037 | 171.733 | 161.398 | 136.872 | 197.549 | 157.151 | 178.293 | 153.943 | 122.527 | 204.913 | 136.060 | 154.269 | 117.057 | 121.683 | 190.481 | 183.623 | 139.137 | 134.482 | 198.659 |
| **Ti** |  | 0.042 | 0.165 | 0.025 | 0.364 | 0.128 | 0.093 | 0.162 | 0.284 | 0.049 | 0.016 | 1.365 | 0.063 | 0.166 | 0.015 | 0.007 |  | 0.290 | 0.031 | 0.005 | 0.164 |
| **Th** |  |  | 0.057 | 0.021 | 0.242 | 0.075 | 0.012 | 0.316 | 0.186 | 0.039 | 0.077 | 0.246 | 0.052 | 0.078 | 0.077 | 0.077 |  | 0.148 | 0.012 | 0.444 | 0.114 |
| **U** | 0.005 |  | 0.051 | 0.012 | 0.142 | 0.014 | 0.009 | 0.063 | 0.141 | 0.022 | 0.080 | 0.020 | 0.014 | 0.026 | 0.008 | 0.015 |  | 0.083 | 0.006 | 0.054 | 0.047 |
| **V** | 0.908 | 0.532 | 1.147 | 0.439 | 1.399 | 0.582 | 0.648 | 0.933 | 1.910 | 0.682 | 1.481 | 0.974 | 0.649 | 0.574 | 0.491 | 1.191 | 0.340 | 1.405 | 0.366 | 0.402 | 1.017 |
| **Zn** | 5.179 | 2.333 | 3.532 | 2.086 | 1.561 | 1.821 | 2.291 | 1.795 | 5.238 | 3.878 | 2.704 | 5.857 | 1.896 | 1.823 | 1.930 | 2.625 | 1.836 | 2.807 | 1.468 | 2.594 | 4.084 |
| **Zr** |  |  | 0.537 | 0.113 | 2.558 | 0.156 | 0.174 | 1.119 | 0.858 | 1.678 | 1.831 | 0.569 | 0.294 | 0.319 | 0.607 | 0.261 | 0.042 | 0.758 | 0.077 | 0.479 | 1.162 |