

**Appendix 1. Geochemistry for analysed shards from JM11-19PC, LINK15, LINK16, ENAM20 and ENAM21.**

|  | SiO <sub>2</sub> | TiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | FeO <sub>tot</sub> | MnO          | MgO         | CaO         | Na <sub>2</sub> O | K <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | Total        | Comment      |         |
|--|------------------|------------------|--------------------------------|--------------------|--------------|-------------|-------------|-------------------|------------------|-------------------------------|--------------|--------------|---------|
| <b>JM11-19PC, 540-541 cm, &gt;100 µm</b> | 50.23            | 2.53             | 13.11                          | 13.58              | 0.28         | 5.49        | 10.00       | 2.39              | 0.33             | 0.24                          | 98.17        |              |         |
|  | 50.05            | 2.48             | 13.14                          | 13.57              | 0.28         | 4.91        | 9.65        | 2.53              | 0.38             | 0.21                          | 97.22        |              |         |
|  | 49.96            | 2.51             | 12.97                          | 13.57              | 0.26         | 5.30        | 9.94        | 2.75              | 0.37             | 0.23                          | 97.85        |              |         |
|  | 49.92            | 2.51             | 12.96                          | 13.90              | 0.26         | 5.33        | 10.11       | 2.61              | 0.35             | 0.23                          | 98.20        |              |         |
|  | 49.70            | 2.52             | 13.16                          | 13.70              | 0.25         | 5.35        | 9.93        | 2.62              | 0.42             | 0.23                          | 97.88        |              |         |
|  | 49.45            | 2.44             | 13.40                          | 13.44              | 0.24         | 5.65        | 10.08       | 2.55              | 0.31             | 0.24                          | 97.79        |              |         |
|  | 49.40            | 2.66             | 12.57                          | 13.66              | 0.24         | 6.01        | 10.27       | 2.53              | 0.37             | 0.26                          | 97.97        |              |         |
|  | 49.22            | 2.52             | 12.98                          | 14.32              | 0.23         | 5.07        | 9.43        | 2.75              | 0.38             | 0.24                          | 97.14        |              |         |
|  | 49.10            | 2.53             | 12.89                          | 13.77              | 0.26         | 5.35        | 9.91        | 2.53              | 0.39             | 0.24                          | 96.97        |              |         |
|  | 49.09            | 2.49             | 13.16                          | 13.53              | 0.25         | 5.67        | 10.15       | 2.69              | 0.28             | 0.24                          | 97.55        |              |         |
|  | 48.87            | 2.40             | 13.44                          | 13.75              | 0.25         | 6.00        | 10.40       | 2.48              | 0.36             | 0.21                          | 98.16        |              |         |
|  | 48.70            | 2.48             | 13.44                          | 13.50              | 0.29         | 5.70        | 9.81        | 2.65              | 0.40             | 0.22                          | 97.19        |              |         |
|  | 48.63            | 2.51             | 12.98                          | 13.55              | 0.26         | 5.50        | 9.73        | 2.66              | 0.36             | 0.23                          | 96.41        |              |         |
|  | 48.55            | 2.72             | 12.81                          | 13.86              | 0.22         | 5.95        | 10.34       | 2.61              | 0.35             | 0.26                          | 97.68        |              |         |
|  | 48.44            | 2.61             | 13.27                          | 13.22              | 0.23         | 6.30        | 10.09       | 2.50              | 0.38             | 0.25                          | 97.29        |              |         |
|  | 48.43            | 2.53             | 13.07                          | 14.06              | 0.28         | 5.38        | 9.66        | 2.77              | 0.42             | 0.25                          | 96.68        |              |         |
| <b>Mean</b>                              | <b>49.23</b>     | <b>2.53</b>      | <b>13.09</b>                   | <b>13.68</b>       | <b>0.25</b>  | <b>5.56</b> | <b>9.97</b> | <b>2.60</b>       | <b>0.37</b>      | <b>0.24</b>                   | <b>97.52</b> |              |         |
| 1 sd                                     | 0.61             | 0.08             | 0.24                           | 0.26               | 0.02         | 0.37        | 0.27        | 0.11              | 0.04             | 0.01                          | 0.53         |              |         |
|  | 49.67            | 2.55             | 13.19                          | 12.28              | 0.25         | 6.94        | 11.33       | 2.29              | 0.22             | 0.23                          | 98.95        | Outlier      |         |
| <b>LINK15, 347-348 cm, &gt;100 µm</b>    | 50.94            | 2.79             | 12.91                          | 13.81              | 0.19         | 4.54        | 8.87        | 2.95              | 0.54             | 0.30                          | 98.17        |              |         |
|  | 50.28            | 2.39             | 12.84                          | 13.01              | 0.19         | 5.16        | 9.51        | 2.72              | 0.47             | 0.20                          | 97.22        |              |         |
|  | 50.27            | 2.75             | 12.48                          | 13.56              | 0.41         | 4.67        | 9.02        | 2.89              | 0.50             | 0.34                          | 97.85        |              |         |
|  | 50.11            | 2.79             | 12.77                          | 13.64              | 0.31         | 4.59        | 9.02        | 2.83              | 0.48             | 0.25                          | 98.20        |              |         |
|  | 49.93            | 2.32             | 12.86                          | 13.22              | 0.15         | 5.03        | 9.35        | 2.79              | 0.43             | 0.28                          | 97.88        |              |         |
|  | 49.23            | 2.44             | 12.82                          | 13.17              | 0.33         | 5.57        | 10.09       | 2.61              | 0.38             | 0.30                          | 97.79        |              |         |
|  | 49.15            | 2.77             | 12.91                          | 13.56              | 0.25         | 5.79        | 10.49       | 2.57              | 0.40             | 0.37                          | 97.97        |              |         |
|  | 48.62            | 3.01             | 12.79                          | 12.98              | 0.36         | 5.89        | 10.38       | 2.60              | 0.38             | 0.30                          | 97.14        |              |         |
|  | 48.57            | 2.74             | 13.02                          | 12.71              | 0.21         | 5.98        | 10.48       | 2.62              | 0.37             | 0.28                          | 96.97        |              |         |
|  | 48.53            | 2.56             | 12.88                          | 13.26              | 0.07         | 5.89        | 10.57       | 2.65              | 0.36             | 0.27                          | 97.55        |              |         |
|  | 48.09            | 3.40             | 12.25                          | 14.48              | 0.31         | 5.23        | 9.65        | 2.76              | 0.44             | 0.31                          | 97.19        |              |         |
|  | <b>Mean</b>      | <b>49.43</b>     | <b>2.72</b>                    | <b>12.78</b>       | <b>13.40</b> | <b>0.25</b> | <b>5.30</b> | <b>9.77</b>       | <b>2.73</b>      | <b>0.43</b>                   | <b>0.29</b>  | <b>97.12</b> |         |
|  | 1 sd             | 0.92             | 0.30                           | 0.22               | 0.49         | 0.10        | 0.55        | 0.66              | 0.13             | 0.06                          | 0.04         | 0.53         |         |
|  |                  | 51.77            | 3.18                           | 12.16              | 14.85        | 0.32        | 3.43        | 7.70              | 2.91             | 0.67                          | 0.32         | 97.35        | Outlier |
|  | 48.27            | 3.72             | 12.57                          | 14.18              | 0.26         | 4.61        | 9.10        | 3.00              | 0.68             | 0.44                          | 98.16        | Katla?       |         |
|  | 46.69            | 2.26             | 10.85                          | 14.95              | 0.17         | 10.46       | 8.40        | 2.37              | 0.40             | 0.24                          | 96.79        | Outlier      |         |
|  | 45.24            | 4.81             | 12.30                          | 14.46              | 0.30         | 4.97        | 10.19       | 2.98              | 0.72             | 0.64                          | 96.65        | Outlier      |         |
| <b>LINK15, 355-356 cm, 100 µm</b>        | 50.22            | 2.26             | 13.26                          | 13.09              | 0.17         | 5.55        | 10.03       | 2.73              | 0.47             | 0.17                          | 97.96        |              |         |
|  | 49.16            | 2.68             | 13.29                          | 12.10              | 0.20         | 6.05        | 10.62       | 2.64              | 0.35             | 0.28                          | 97.39        |              |         |
|  | 49.15            | 2.77             | 13.11                          | 12.28              | 0.16         | 6.13        | 10.93       | 2.66              | 0.33             | 0.20                          | 97.72        |              |         |
|  | 49.05            | 2.74             | 13.21                          | 13.19              | 0.13         | 5.33        | 10.16       | 2.74              | 0.40             | 0.33                          | 97.32        |              |         |
|  | 48.93            | 2.92             | 12.88                          | 13.07              | 0.15         | 5.67        | 10.21       | 2.72              | 0.42             | 0.31                          | 97.30        |              |         |
|  | 48.73            | 2.50             | 13.33                          | 12.37              | 0.11         | 6.16        | 10.90       | 2.61              | 0.36             | 0.08                          | 97.16        |              |         |
|  | <b>Mean</b>      | <b>49.20</b>     | <b>2.64</b>                    | <b>13.18</b>       | <b>12.68</b> | <b>0.15</b> | <b>5.81</b> | <b>10.48</b>      | <b>2.68</b>      | <b>0.39</b>                   | <b>0.23</b>  | <b>97.48</b> |         |
| 1 sd                                     | 0.52             | 0.23             | 0.17                           | 0.48               | 0.03         | 0.35        | 0.40        | 0.06              | 0.05             | 0.10                          | 0.30         |              |         |
|  | 49.63            | 4.16             | 12.34                          | 15.26              | 0.18         | 4.26        | 9.09        | 2.82              | 0.63             | 0.57                          | 97.96        | Katla        |         |

|  |              |             |              |              |             |             |              |             |             |             |              |              |
|--|--------------|-------------|--------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|
|  | 49.39        | 3.47        | 12.65        | 14.30        | 0.24        | 4.44        | 8.87         | 3.05        | 0.67        | 0.46        | 97.39        | Katla        |
|  | 49.16        | 3.94        | 12.78        | 13.92        | 0.38        | 4.48        | 9.07         | 2.95        | 0.68        | 0.58        | 97.72        | Katla        |
|  | 49.08        | 3.82        | 12.59        | 13.67        | 0.33        | 4.33        | 8.66         | 2.97        | 0.76        | 0.54        | 97.32        | Katla        |
| <b>Mean</b>  | <b>49.31</b> | <b>3.85</b> | <b>12.59</b> | <b>14.29</b> | <b>0.28</b> | <b>4.38</b> | <b>8.92</b>  | <b>2.95</b> | <b>0.69</b> | <b>0.54</b> | <b>97.84</b> | <b>Katla</b> |
| 1 sd   | 0.25         | 0.29        | 0.19         | 0.69         | 0.09        | 0.10        | 0.20         | 0.09        | 0.05        | 0.05        | 0.92         |              |
|  | 51.42        | 2.56        | 14.54        | 10.55        | 0.30        | 4.75        | 10.10        | 3.44        | 0.40        | 0.32        | 98.39        | Outlier      |
|  | 51.14        | 2.88        | 12.63        | 13.90        | 0.25        | 4.28        | 8.61         | 2.95        | 0.57        | 0.29        | 97.52        | Outlier      |
|  | 48.32        | 3.62        | 10.71        | 13.44        | 0.37        | 7.32        | 10.81        | 2.22        | 0.52        | 0.50        | 97.85        | Outlier      |
| <b>LINK16, 205-206 cm, 63-125 <math>\mu</math>m</b>  | 49.88        | 2.55        | 13.25        | 14.11        | 0.26        | 5.40        | 9.68         | 2.81        | 0.43        | 0.24        | 98.60        |              |
|  | 49.59        | 2.50        | 13.29        | 13.08        | 0.27        | 5.44        | 9.91         | 2.62        | 0.31        | 0.22        | 97.25        |              |
|  | 49.58        | 2.52        | 13.45        | 13.54        | 0.23        | 5.51        | 9.80         | 2.71        | 0.35        | 0.24        | 97.93        |              |
| <b>Mean</b>  | <b>49.68</b> | <b>2.52</b> | <b>13.33</b> | <b>13.58</b> | <b>0.26</b> | <b>5.45</b> | <b>9.80</b>  | <b>2.71</b> | <b>0.36</b> | <b>0.23</b> | <b>97.93</b> |              |
| 1 sd   | 0.17         | 0.02        | 0.11         | 0.51         | 0.02        | 0.06        | 0.12         | 0.09        | 0.06        | 0.01        | 0.68         |              |
| <b>ENAM20, 455-456 cm, 63-150 <math>\mu</math>m</b>  | 50.72        | 2.39        | 14.08        | 13.07        | 0.23        | 5.45        | 9.76         | 2.37        | 0.33        | 0.21        | 98.17        |              |
|  | 49.59        | 2.52        | 12.95        | 13.70        | 0.25        | 5.33        | 10.25        | 2.65        | 0.40        | 0.24        | 97.22        |              |
|  | 49.44        | 2.56        | 13.28        | 13.17        | 0.24        | 5.97        | 10.12        | 2.37        | 0.33        | 0.26        | 97.85        |              |
|  | 49.37        | 2.49        | 13.38        | 14.04        | 0.24        | 5.54        | 9.66         | 2.56        | 0.33        | 0.24        | 98.20        |              |
|  | 49.20        | 2.57        | 13.42        | 13.73        | 0.25        | 5.92        | 10.16        | 2.41        | 0.36        | 0.24        | 97.88        |              |
|  | 48.81        | 2.43        | 13.11        | 13.28        | 0.24        | 5.74        | 10.10        | 2.39        | 0.32        | 0.20        | 97.79        |              |
| <b>Mean</b>  | <b>49.52</b> | <b>2.49</b> | <b>13.37</b> | <b>13.50</b> | <b>0.24</b> | <b>5.66</b> | <b>10.01</b> | <b>2.46</b> | <b>0.35</b> | <b>0.23</b> | <b>97.83</b> |              |
| 1 sd   | 0.65         | 0.07        | 0.39         | 0.38         | 0.01        | 0.26        | 0.24         | 0.12        | 0.03        | 0.02        | 0.67         |              |
|  | 50.01        | 2.76        | 14.04        | 12.98        | 0.19        | 4.08        | 8.12         | 3.43        | 0.99        | 0.34        | 96.95        | Outlier      |
|  | 49.20        | 3.50        | 13.16        | 14.11        | 0.28        | 4.37        | 9.12         | 2.76        | 0.64        | 0.44        | 97.57        | Outlier      |
| <b>ENAM20, 455-456 cm, &gt;150 <math>\mu</math>m</b> | 50.94        | 2.64        | 13.60        | 14.67        | 0.27        | 4.08        | 9.67         | 2.82        | 0.41        | 0.22        | 99.31        |              |
|  | 50.29        | 2.49        | 13.28        | 13.75        | 0.24        | 5.54        | 9.85         | 2.52        | 0.35        | 0.22        | 98.55        |              |
|  | 49.81        | 2.54        | 12.85        | 13.86        | 0.27        | 5.96        | 10.01        | 2.32        | 0.36        | 0.23        | 98.22        |              |
|  | 49.59        | 2.53        | 13.10        | 14.08        | 0.26        | 5.45        | 10.23        | 2.61        | 0.38        | 0.23        | 98.47        |              |
|  | 49.35        | 2.56        | 13.28        | 13.05        | 0.22        | 5.79        | 10.03        | 2.51        | 0.35        | 0.24        | 97.37        |              |
|  | 48.45        | 2.51        | 13.72        | 12.66        | 0.22        | 6.18        | 10.58        | 2.58        | 0.33        | 0.22        | 97.43        |              |
| <b>Mean</b>  | <b>49.74</b> | <b>2.55</b> | <b>13.31</b> | <b>13.68</b> | <b>0.25</b> | <b>5.50</b> | <b>10.06</b> | <b>2.56</b> | <b>0.36</b> | <b>0.23</b> | <b>98.23</b> |              |
| 1 sd   | 0.85         | 0.05        | 0.32         | 0.72         | 0.03        | 0.75        | 0.32         | 0.16        | 0.03        | 0.01        | 0.73         |              |
|  | 50.43        | 2.04        | 14.52        | 11.23        | 0.21        | 6.38        | 10.21        | 2.73        | 0.28        | 0.19        | 98.22        | Outlier      |
| <b>LINK21, 860-861 cm, 63-150 <math>\mu</math>m</b>  | 51.46        | 2.37        | 13.26        | 12.85        | 0.23        | 4.55        | 8.86         | 3.27        | 0.51        | 0.28        | 98.17        | outlier?     |
|  | 51.30        | 2.32        | 13.10        | 12.31        | 0.27        | 4.41        | 8.51         | 3.28        | 0.57        | 0.28        | 97.22        | outlier?     |
|  | 49.67        | 2.44        | 13.19        | 13.81        | 0.24        | 5.92        | 10.22        | 2.61        | 0.33        | 0.23        | 97.85        |              |
|  | 49.58        | 2.60        | 12.55        | 14.14        | 0.27        | 5.26        | 9.40         | 2.99        | 0.45        | 0.25        | 98.20        |              |
|  | 49.37        | 2.44        | 13.35        | 12.98        | 0.22        | 6.05        | 10.21        | 2.79        | 0.35        | 0.21        | 97.88        |              |
|  | 49.18        | 2.51        | 13.04        | 13.02        | 0.26        | 5.84        | 10.27        | 2.68        | 0.39        | 0.24        | 97.79        |              |
|  | 48.61        | 2.55        | 12.71        | 13.73        | 0.26        | 5.44        | 9.69         | 2.74        | 0.42        | 0.24        | 97.97        |              |
|  | 47.38        | 2.61        | 13.47        | 13.40        | 0.28        | 5.51        | 10.58        | 3.06        | 0.62        | 0.25        | 97.14        |              |
| <b>Mean</b>  | <b>49.33</b> | <b>2.48</b> | <b>13.08</b> | <b>13.28</b> | <b>0.25</b> | <b>5.37</b> | <b>9.72</b>  | <b>2.93</b> | <b>0.46</b> | <b>0.25</b> | <b>97.39</b> |              |
| 1 sd   | 0.94         | 0.10        | 0.32         | 0.60         | 0.02        | 0.61        | 0.74         | 0.26        | 0.11        | 0.02        | 0.77         |              |
| <b>LINK21, 865-866 cm, &gt;150 <math>\mu</math>m</b> | 50.63        | 2.55        | 13.07        | 13.78        | 0.24        | 5.54        | 10.05        | 1.86        | 0.38        | 0.26        | 98.38        | Outlier?     |
|  | 50.07        | 2.76        | 12.45        | 13.93        | 0.25        | 4.85        | 9.17         | 2.79        | 0.43        | 0.28        | 96.98        |              |
|  | 49.72        | 2.52        | 12.92        | 13.30        | 0.26        | 5.37        | 9.75         | 2.53        | 0.36        | 0.25        | 96.98        |              |
|  | 49.64        | 2.64        | 13.03        | 13.69        | 0.26        | 5.25        | 9.63         | 2.75        | 0.38        | 0.25        | 97.51        |              |
|  | 49.57        | 2.55        | 12.49        | 13.90        | 0.24        | 5.50        | 9.82         | 2.88        | 0.44        | 0.22        | 97.61        |              |
| <b>Mean</b>  | <b>49.92</b> | <b>2.61</b> | <b>12.79</b> | <b>13.72</b> | <b>0.25</b> | <b>5.30</b> | <b>9.69</b>  | <b>2.56</b> | <b>0.40</b> | <b>0.25</b> | <b>97.49</b> |              |
| 1 sd   | 0.44         | 0.10        | 0.30         | 0.25         | 0.01        | 0.28        | 0.33         | 0.41        | 0.04        | 0.01        | 0.58         |              |