**Supplementary Material 3**. *Clay fraction mineralogy and Sybilla© parameters used for XRD traces modelling*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Mineral phase / Sample | σ\* | CSDS | Sme (%) | Ill (%) | Ka (%) | Sample % | Group |
| R0 I-SS (Gračanica) | 18 | 29 | 72 | 28 | - | 67 | 2 |
| R0 I-SS (Gračanica) | 6 | 30 | 56 | 44 | - | 13 |  |
| R0 I-SS (Gračanica) | 2 | 28 | 31 | 69 | - | 3 |  |
| Illite (Gračanica) | 12 | 13 | - | - | - | 18 |  |
|  |  |  |  |  |  |  |  |
| R0 I-SSS (Ostrožac) | 12 | 15 | 85 | 15 | - | 4 | 2 |
| R0 I-SS (Ostrožac) | 18 | 10 | 84 | 16 | - | 39 |  |
| R0 I-SS (Ostrožac) | 4 | 31 | 57 | 43 | - | 5 |  |
| R0 I-SS (Ostrožac) | 4 | 60 | 37 | 63 | - | 4 |  |
| R0 I-SS (Ostrožac) | 2 | 28 | 17 | 83 | - | 2 |  |
| R0 K-S (Ostrožac) | 12 | 11 | 8 | - | 82 | 16 |  |
| R0 K-S (Ostrožac) | 12 | 11 | 7 | - | 83 | 9 |  |
| Illite (Ostrožac) | 12 | 13 |  |  |  | 21 |  |
|  |  |  |  |  |  |  |  |
| R0 I-SSS (Kamengrad2\_4) | 12 | 15 | 85 | 15 | - | 2 | 3 |
| R0 I-SS (Kamengrad2\_4) | 18 | 9 | 84 | 16 | - | 37 |  |
| R0 I-SS (Kamengrad2\_4) | 4 | 30 | 57 | 43 | - | 4 |  |
| R0 I-SS (Kamengrad2\_4) | 4 | 30 | 37 | 63 | - | 3 |  |
| R0 I-SS (Kamengrad2\_4) | 4 | 30 | 17 | 83 | - | 2 |  |
| Illite (Kamengrad2\_4) | 12 | 13 | - | - | - | 52 |  |
|  |  |  |  |  |  |  |  |
| R0 I-SSS (Čaklovići) | 12 | 6 | 90 | 10 | - | 2 | 3 |
| R0 I-SSS (Čaklovići) | 10 | 18 | 69 | 31 | - | 9 |  |
| R0 I-SSS (Čaklovići) | 35 | 4 | 71 | 29 | - | 85 |  |
| R0 I-S (Čaklovići) | 2 | 50 | 24 | 76 | - | 4 |  |
|  |  |  |  |  |  |  |  |
| R0 I-SSS (Glavice) | 8 | 4 | 92 | 8 | - | 100 | 1 |
|  |  |  |  |  |  |  |  |
| R0 I-SSS (Mandek) | 12 | 8 | 96 | 4 | - | 56 | 1 |
| R1 I-SSS (Mandek) | 12 | 53 | 65 | 35 | - | 44 |  |
|  |  |  |  |  |  |  |  |
| R0 I-S (Tušnica) | 4 | 18 | 42 | 58 | - | 27 | 4 |
| R0 I-S (Tušnica) | 4 | 30 | 30 | 70 | - | 37 |  |
| R0 I-S (Tušnica) | 12 | 12 | 3 | 97 | - | 36 |  |

σ\* – orientation of particles on the mounted X-ray slide; CSDS – coherent scattering domain sizes expressed in layers; Sme (%), Ka (%), and Ill (%) – smectite, kaolinite, and illite content in the respective mixed-layered minerals (in %); I-S – illite-smectite; K-S – kaolinite-smectite R – Reichweit (order)