Supporting information:

Table 2. Numerical values of the average IV-parameters as a function of time.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cell series | Day # | Before/after  temp. treatment | Voc (V) | Isc (mA/cm2) | FF (%) | η (%) |
| L-S | 1 | before | 0.68 | 18.6 | 49 | 6.2 |
| after | 0.71 | 18.1 | 49 | 6.4 |
| *reference* | *0.69* | *17.4* | *48* | *5.8* |
| 12 | before | 0.73 | 17.0 | 51 | 6.4 |
| after | 0.73 | 17.0 | 52 | 6.5 |
| *reference* | *0.74* | *15.6* | *49* | *5.7* |
| 29 | before | 0.74 | 16.4 | 52 | 6.4 |
| after | 0.74 | 16.4 | 53 | 6.5 |
| *reference* | *0.75* | *14.8* | *49* | *5.5* |
| 78 | before | 0.73 | 14.3 | 56 | 5.8 |
| after | 0.74 | 14.0 | 57 | 5.9 |
| *reference* | *0.76* | *12.9* | *51* | *5.0* |
| G-S | 1 | before | 0.60 | 16.7 | 46 | 4.7 |
| after | 0.64 | 17.0 | 48 | 5.2 |
| *reference* | *0.62* | *16.2* | *49* | *4.9* |
| 12 | before | 0.66 | 15.4 | 50 | 5.1 |
| after | 0.66 | 16.1 | 52 | 5.5 |
| *reference* | *0.67* | *14.2* | *54* | *5.1* |
| 29 | before | 0.67 | 14.8 | 51 | 5.1 |
| after | 0.68 | 15.5 | 52 | 5.5 |
| *reference* | *0.68* | *13.5* | *55* | *5.0* |
| 77 | before | 0.67 | 12.9 | 54 | 4.7 |
| after | 0.68 | 13.6 | 55 | 5.1 |
| *reference* | *0.68* | *11.3* | *58* | *4.5* |
| L-NS | 1 | before | 0.66 | 8.8 | 59 | 3.4 |
| after | 0.68 | 9.6 | 60 | 3.9 |
| *reference* | *0.68* | *7.6* | *62* | *3.2* |
| 11 | before | 0.68 | 8.7 | 61 | 3.7 |
| after | 0.68 | 8.9 | 62 | 3.8 |
| *reference* | *0.71* | *7.6* | *64* | *3.5* |
| 29 | before | 0.68 | 7.5 | 63 | 3.2 |
| after | 0.68 | 7.4 | 63 | 3.2 |
| *reference* | *0.71* | *6.5* | *65* | *3.0* |
| 76 | before | 0.68 | 5.7 | 64 | 2.5 |
| after | 0.68 | 5.2 | 65 | 2.3 |
| *reference* | *0.72* | *4.9* | *67* | *2.4* |
| G-NS | 1 | before | 0.63 | 7.0 | 61 | 2.7 |
| after | 0.66 | 8.4 | 60 | 3.3 |
| *reference* | *0.63* | *6.6* | *61* | *2.5* |
| 12 | before | 0.68 | 7.1 | 62 | 3.0 |
| after | 0.68 | 7.8 | 62 | 3.2 |
| *reference* | *0.68* | *6.6* | *63* | *2.8* |
| 29 | before | 0.68 | 6.2 | 63 | 2.7 |
| after | 0.68 | 6.5 | 63 | 2.8 |
| *reference* | *0.68* | *5.6* | *64* | *2.4* |
| 78 | before | 0.68 | 4.1 | 66 | 1.8 |
| after | 0.68 | 4.2 | 67 | 1.9 |
| *reference* | *0.68* | *4.0* | *66* | *1.8* |

Table 3. Cell efficiency ratios. *η1* = initial cell efficiency, *η2* = cell efficiency on the day 76 – 78, after the last temperature treatment. Positive value in the last column indicates the temperature treated cells degraded less than the reference cells; negative value the opposite.

|  |  |  |  |
| --- | --- | --- | --- |
| Cell type | η2/η1, temp.  treated cells (%) | η2/η1, ref. cells (%) | η2/η1, temp. treated −  η2/η1, ref. cells  (%-unit) |
| L-S | 95 | 86 | 9 |
| G-S | 109 | 92 | 17 |
| L-NS | 68 | 75 | -7 |
| G-NS | 70 | 72 | -2 |

Table 4. EIS parameters of the sintered cells at different temperatures and measurement days. Corresponding parameters for the reference cells are also included. The results for the cell series G-S for day 1 are omitted due to an equipment failure which led to erroneously large resistance values for that day. Standard deviations are not listed in the table but for the *Voc* they were 1 – 2 %, for the *Rrec* and *Rct* 1 – 10 %, for the *Cpe* and *Cce* 1 – 10 %, and for the *τe* 5 – 10 % of the average parameter values (larger values again typical for the most aged cells in the highest temperatures). The letter “d” after the temperature value indicates the downward sweep of the temperature cycle.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cell  series | Day  # | T  (oC) | Voc  (V) | Rrec  (Ωcm2) | Rct  (Ωcm2) | Cpe  (mF/cm2) | Cceorrected  (μF/cm2) | τe  (ms) |
| L-S | 1 | 20 | 0.64 | 15.5 | 4.9 | 3.6 | 28.2 | 56 |
| 40 | 0.60 | 16.5 | 3.2 | 3.3 | 26.0 | 54 |
| 70 | 0.54 | 16.5 | 1.7 | 2.5 | 21.0 | 41 |
| 40d | 0.61 | 18.0 | 3.3 | 3.4 | 24.0 | 61 |
| 20d | 0.64 | 18.7 | 4.5 | 3.8 | 25.6 | 71 |
| *ref.* | *0.64* | *18.7* | *4.6* | *4.0* | *27.4* | *74* |
| 12 | 20 | 0.66 | 20.4 | 5.2 | 3.7 | 21.7 | 75 |
| 40 | 0.62 | 19.9 | 3.2 | 3.4 | 20.5 | 67 |
| 70 | 0.53 | 25.1 | 1.8 | 2.2 | 18.0 | 56 |
| 40d | 0.63 | 17.7 | 3.3 | 3.4 | 19.7 | 61 |
| 20d | 0.67 | 17.6 | 5.0 | 3.9 | 21.7 | 69 |
| *ref.* | *0.67* | *22.7* | *8.0* | *3.8* | *18.5* | *85* |
| 29 | 20 | 0.65 | 24.4 | 5.0 | 3.1 | 18.9 | 76 |
| 40 | 0.63 | 20.2 | 3.3 | 3.1 | 18.6 | 62 |
| 70 | 0.51 | 31.9 | 1.8 | 1.7 | 18.1 | 55 |
| 40d | 0.60 | 26.4 | 3.4 | 2.6 | 17.5 | 68 |
| 20d | 0.65 | 22.0 | 4.7 | 3.0 | 18.4 | 66 |
| *ref.* | *0.67* | *28.3* | *8.5* | *3.1* | *16.4* | *89* |
| 78 | 20 | 0.65 | 30.2 | 5.6 | 2.4 | 15.7 | 70 |
| 40 | 0.61 | 33.1 | 3.6 | 2.0 | 14.1 | 66 |
| 70 | 0.46 | 54.1 | 1.5 | 0.8 | 20.5 | 43 |
| 40d | 0.58 | 39.8 | 3.9 | 1.7 | 14.0 | 67 |
| 20d | 0.63 | 33.0 | 5.2 | 2.0 | 15.0 | 66 |
| *ref.* | *0.67* | *36.7* | *10.4* | *2.3* | *13.7* | *86* |
| G-S | 12 | 20 | 0.59 | 19.8 | 5.3 | 2.7 | 23.4 | 54 |
| 40 | 0.56 | 20.3 | 3.5 | 2.5 | 21.5 | 51 |
| 70 | 0.46 | 25.5 | 1.6 | 1.7 | 19.8 | 43 |
| 40d | 0.56 | 19.8 | 3.4 | 2.5 | 21.4 | 51 |
| 20d | 0.59 | 19.7 | 4.6 | 2.8 | 23.3 | 55 |
| *ref.* | *0.60* | *24.3* | *5.7* | *2.2* | *23.4* | *53* |
| 29 | 20 | 0.59 | 23.4 | 5.4 | 2.5 | 21.5 | 59 |
| 40 | 0.56 | 24.4 | 3.6 | 2.3 | 19.6 | 57 |
| 70 | 0.44 | 40.2 | 1.8 | 1.3 | 21.6 | 51 |
| 40d | 0.55 | 27.7 | 3.6 | 2.2 | 19.0 | 60 |
| 20d | 0.59 | 22.8 | 4.7 | 2.6 | 21.2 | 58 |
| *ref.* | *0.60* | *24.8* | *5.9* | *2.0* | *21.5* | *50* |
| 77 | 20 | 0.58 | 35.6 | 6.6 | 1.9 | 17.4 | 68 |
| 40 | 0.54 | 35.4 | 5.0 | 1.7 | 16.0 | 60 |
| 70 | 0.43 | 45.9 | 1.4 | 0.8 | 40.4 | 36 |
| 40d | 0.54 | 30.6 | 4.6 | 1.8 | 16.3 | 54 |
| 20d | 0.58 | 31.2 | 5.6 | 2.0 | 17.8 | 62 |
| *ref.* | *0.60* | *37.7* | *7.5* | *1.6* | *17.6* | *58* |