Phase separation and transformation of binary immiscible systems in molten core derived optical fibers

Supplementary Material

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**Figure S1**: Immiscibility region of the CaO-SiO2 phase diagram



Immiscibility region of the CaO-SiO2 phase diagram with the measured compositions (blue dashed lines) of the CaO-rich matrix and the SiO2-rich microphase overlaid. The line connecting the two compositions (grey solid line) along the immiscibility gap is expected to be isothermal, however, this is not the case. The slight temperature discrepancy is explained in the text of the Communication. The 0 point corresponds to 100 mol% SiO2.

*Adapted from* S. Kim and T. Sanders: Thermodynamic modeling of the miscibility gaps and the metastable liquidi in the MgO-SiO2, CaO-SiO2, and SrO-SiO2 Systems. *J. Am. Ceram. Soc.* **82**, 1901-1907 (1999).

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**Figure S2**: XRD pattern of CaO-derived fiber



XRD pattern for the CaO-derived fiber. Prior to analysis, the sample was prepared similarly to the NiO-derived fiber described in the text. The broad peak at approximately 23° (2θ) corresponds to amorphous silica.

**Table S3**: Composition (atomic %) of the various phases observed in the core of the NiO-derived fiber.

|  |  |  |  |
| --- | --- | --- | --- |
| **Atomic %** | **Nodular phase** | **Convolved phase** | **Matrix** |
| **Ni**  | 63.43 | 19.10 | 32.30 |
| **Si** | 10.59 | 24.34 | 20.74 |
| **O** | 25.98 | 56.56 | 46.96 |