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

Supplementary Material

Matthew Tuggle,1,2 Thomas W. Hawkins,1,2 Courtney Kucera,1,2 Nathaniel Huygen,2,3 Artis Brasovs,2 Konstantin Kornev,2 and John Ballato1,2,\*

*1Center for Optical Materials Science and Engineering Technologies (COMSET), 91 Technology Drive, Clemson University, Clemson, SC 29625, USA*

*2The Department of Materials Science and Engineering, 295 Sirrine Hall, Clemson University, Clemson, SC 29634, USA*

*3National Brick Research Center, 100 Clemson Research Boulevard, Clemson University, Clemson, SC 29625, USA*

*\*Corresponding author: John Ballato;* [*jballat@clemson.edu*](mailto:jballat@clemson.edu)

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

A close up of a map

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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

A picture containing outdoor, sky

Description automatically generated

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 |