**Supplementary**

**On the optimal Cs/Co ratio responsible for the N2O decomposition activity of the foam supported cobalt oxide catalysts.**

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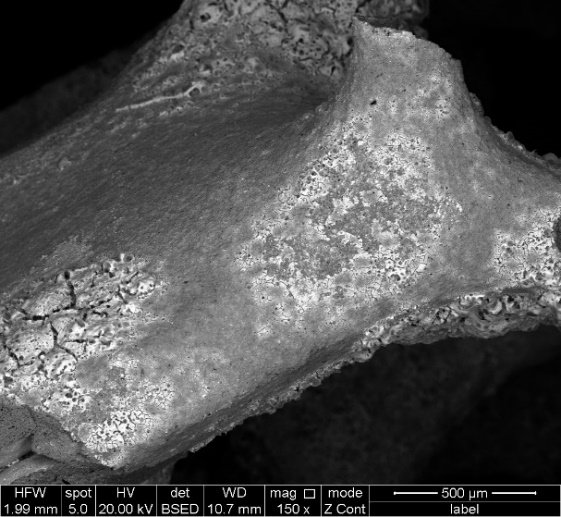
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S1: Content of used impregnation solutions for the preparation of foam catalysts.

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| **Sample** | **Composition of impregnation solution** |
| *L (c.i.)* | 42.667g Co(NO3)2∙6H2O + H2O up to 75 ml |
| *L (Ace)* | 42.667g Co(NO3)2∙6H2O + 8.804g Acetic acid + H2O up to 75 ml |
| *L (Cit)* | 42.667g Co(NO3)2∙6H2O + 28.166g Citric acid + H2O up to 75 ml |
| *L (Glr)* | 42.667g Co(NO3)2∙6H2O + 13.501g Glycerol + H2O up to 75 ml |
| *L (Gly)* | 42.667g Co(NO3)2∙6H2O + 11.005g Glycin + H2O up to 75 ml |
| *L (Ure)* | 42.667g Co(NO3)2∙6H2O + 8.805g Urea + H2O up to 75 ml |
| *H (c.i.)* | 50.4 g Co(NO3)2∙6H2O + 25 ml H2O |
| *H (Glr-1)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol |
| *H (Glr-2)* | 50.4 g Co(NO3)2∙6H2O + 25 ml (~31.49 g) Glycerol |
| *C.i.(Cs1)* | 67.2 g Co(NO3)2∙6H2O + 0.300 g CsNO3 + 38 ml H2O |
| *C.i.(Cs2)* | 67.2 g Co(NO3)2∙6H2O + 0.600 g CsNO3 + 38 ml H2O |
| *C.i.(Cs3)* | 67.2 g Co(NO3)2∙6H2O + 0.900 g CsNO3 + 38 ml H2O |
| *C.i.(Cs4)* | 67.2 g Co(NO3)2∙6H2O + 1.200 g CsNO3 + 38 ml H2O |
| *C.i.(Cs5)* | 67.2 g Co(NO3)2∙6H2O + 1.500 g CsNO3 + 38 ml H2O |
| *C.i.(Cs6)* | 67.2 g Co(NO3)2∙6H2O + 1.800 g CsNO3 + 38 ml H2O |
| *Glr (Cs1)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 0.225 g CsNO3 |
| *Glr (Cs2)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 0.450 g CsNO3 |
| *Glr (Cs3)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 0.675 g CsNO3 |
| *Glr (Cs4)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 0.900 g CsNO3 |
| *Glr (Cs5)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 1.125 g CsNO3 |
| *Glr (Cs6)* | 50.4 g Co(NO3)2∙6H2O + 12.5 ml H2O + 12.5 ml (~15.74 g) Glycerol + 1.350 g CsNO3 |

S2: Ascription of the XRD diffraction lines to individual phases.

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| **Sample** | **Determined phases/2-Theta (°)** |
| *L (c.i.)* | **Corundum Al2O3 (PDF ICDD 01-075-1862)**/ 29.7, 40.9, 48.7, 50.7, 54.1, 61.7, 57.9, 72.5, 77.4, 79.2, 81.1, 84.0;  **Mullite Al4.54Si1.46O9.73****(PDF ICDD 01-079-1456)** /19.0, 26.9, 27.3, 30.1, 30.5, 36.0, 38.7, 40.9, 42.9, 44.1, 45.9, 47.7, 49.8, 55.5, 56.6, 59.7, 62.8, 63.7, 67.8, 69.0, 71.8, 75.5, 76.6, 77.6, 79.0, 84.0, 85.0;  **Spinel Co3O4****(PDF ICDD 00-042-1467)** / 22.0, 36.4, 42.9, 45.0, 52.4, 58.1, 65.6, 70.1, 77.4, 83.2, 88.9; |
| *L (Ace)* |
| *L (Cit)* |
| *L (Glr)* |
| *L (Gly)* |
| *L (Ure)* |
| *H (c.i.)* |
| *H (Glr-1)* |
| *H (Glr-2)* |
| *Co3O4* | **Spinel Co3O4****(PDF ICDD 00-042-1467)** / 22.0, 36.4, 42.9, 45.0, 52.4, 58.1, 65.6, 70.1, 77.4, 83.2, 88.9; |
| *Foam* | **Corundum Al2O3 (PDF ICDD 01-075-1862)**/ 29.7, 40.9, 48.7, 50.7, 54.1, 61.7, 57.9, 72.5, 77.4, 79.2, 81.1, 84.0;  **Mullite Al4.54Si1.46O9.73****(PDF ICDD 01-079-1456)** /19.0, 26.9, 27.3, 30.1, 30.5, 36.0, 38.7, 40.9, 42.9, 44.1, 45.9, 47.7, 49.8, 55.5, 56.6, 59.7, 62.8, 63.7, 67.8, 69.0, 71.8, 75.5, 76.6, 77.6, 79.0, 84.0, 85.0; |



S3: SEM micrographs of the L(grl) catalyst.

A collage of multiple colored smoke

Description automatically generated

S4: HAADF and EDX chemical maps (Kα - lines) showing local distribution of the elements for: a1-a6) L(c.i.), b1 – b6) L (Ace), c1 – c6) L (Glr) samples. *Color coding*: Co (blue), O (red), Al (pink), Mg (green), Si (yellow).

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| Obsah obrázku text, diagram, Vykreslený graf, řada/pruh  Popis byl vytvořen automaticky | Obsah obrázku text, diagram, Vykreslený graf, řada/pruh  Popis byl vytvořen automaticky |

S5: TPR-H2 profiles of the the catalysts prepared by a) conventional and c) glycerol assisted impregnation differing in cesium loading.

A collage of images of different colors

Description automatically generated

S6: HAADF and EDX chemical maps (Kα - lines) showing local distribution of the elements for: a1-a7) C.i. (Cs0), b1 – b7) C.i. (Cs1), c1 – c7) C.i. (Cs4), d1 – d7) C.i. (Cs6) samples. *Color coding*: Cs (orange), Co (blue), O (red), Mg (green), Al (yellow), Si (peach orange).

A collage of images of smoke

Description automatically generated

S7: HAADF and EDX chemical maps (Kα - lines) showing local distribution of the elements for: a1-a7) Glr (Cs0), b1 – b7) Glr (Cs1), c1 – c7) Glr (Cs3), d1 – d7) Glr (Cs6) samples. *Color coding*: Cs (orange), Co (blue), O (red), Mg (green), Al (yellow), Si (peach orange).

S8: Dependence of Co/Cs molar ratio determined from AAS results on the cesium amount (wt. % of active phase).

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S9: Dependence of Co/Cs molar ratio obtained by TEM on the places covered by spinel on the nominal amount of cesium. Left) Supported catalyst prepared by conventional impregnation. Right) Supported catalyst prepared by glycerol assisted impregnation.

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S10: Dependence of cesium amount (wt. % of active phase from AAS) on the nominal amount of cesium. Left) Supported catalyst prepared by conventional impregnation. Right) Supported catalyst prepared by glycerol assisted impregnation.