Supplementary Material

Dimethylsulfoxide Solvates of the Aluminium(III), Gallium(III) and Indium(III) Ions. A Crystallographic, EXAFS and Vibrational Spectroscopic Study

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Legends to Figures

Fig. S1. Normalized absorption edges of the gallium(III) samples studied. (a) Dimethylsulfoxide solution of gallium(III) perchlorate (offset: 1.0), (b) solid hexakis-(dimethylsulfoxide)gallium(III) perchlorate (offset 0.8).

Fig. S2. The fit and the individual contribution of the different scattering paths of the EXAFS data of
(a) dimethylsulfoxide solution of gallium(III) perchlorate, solid line - experimental data, dashed line - calculated model function using the parameters given in Table 3. Individual contributions: (offset -8) Ga-O single scattering (SS), (offset -20) Ga--S SS, (offset -25) Ga-O-S 3-leg multiple scattering (MS), (offset -28) Ga-O-O 3-leg linear MS, (offset -31) Ga-O-Ga-O 4-leg linear MS, and (offset -34) Ga-O-Ga-O 4-leg linear MS,
(b) solid hexakis(dimethylsulfoxide)gallium(III) trifluoromethanesulfonate, solid line - experimental data, dashed line - calculated model function using the parameters given in Table 3. Individual contributions: (offset -8) Ga-O single scattering (SS), (offset -20) Ga--S SS, (offset -26) Ga-O-S 3-leg multiple scattering (MS), (offset -29) Ga-O-O 3-leg linear MS, (offset -32) Ga-O-Ga-O 4-leg linear MS, and (offset -35) Ga-O-Ga-O 4-leg linear MS,

Fig. S3. Normalized absorption edges of the indium(III) samples studied. (a) Dimethylsulfoxide solution of indium(III) trifluoromethanesulfonate (offset: 0.8), (b) solid hexakis(dimethylsulfoxide)indium(III) trifluoromethanesulfonate (offset 0.6).

Fig. S4. The fit and the individual contribution of the different scattering paths of the EXAFS data of (a) dimethylsulfoxide solution of indium(III) trifluoromethanesulfonate, solid line - experimental data, dashed line - calculated model function using the parameters given in Table 3. Individual contributions: (offset -5) In-O single scattering (SS), (offset -11) In--S SS, (offset -14) In-O-S 3-leg multiple scattering (MS), (offset -16) In-O-O 3-leg linear MS, (offset -18) In-O-In-O 4-leg linear MS, and (offset -20) In-O-In-O 4-leg linear MS,
(b) solid hexakis(dimethylsulfoxide)indium(III) perchlorate, solid line - experimental data, dashed line - calculated model function using the parameters given in Table 3.
Individual contributions: (offset -5) In-O single scattering (SS), (offset -11) In⋯S SS, (offset -14) In-O-S 3-leg multiple scattering (MS), (offset -16) In-O-O 3-leg linear MS, (offset -18) In-O-In-O 4-leg linear MS, and (offset -20) In-O-In-O 4-leg linear MS,

Fig. S5. EXAFS data Comparison of (a) dimethylsulfoxide solution of gallium(III) perchlorate (dashed line) and solid hexakis(dimethylsulfoxide)gallium(III) trifluoromethanesulfonate and (b) dimethylsulfoxide solution of indium(III) trifluoromethanesulfonate (dashed line) and solid hexakis(dimethylsulf-oxide)indium(III) perchlorate (DMSO).

Figure S6. Correlation between compression ratio (*s/h*) and bond lengths in $[M(dmso)_6]I_3$ (o) complexes (M = Al, Ga, and In), and $[M(dmso)_6](ClO_4)_3$ (×) complexes (M = In and Tl).

Figure S7. Correlation between metal-oxygen (M-O) force constants and bond lengths in $[M(dmso)_6]I_3$ complexes (M = Al, Ga, In and Tl).

Figure S1.

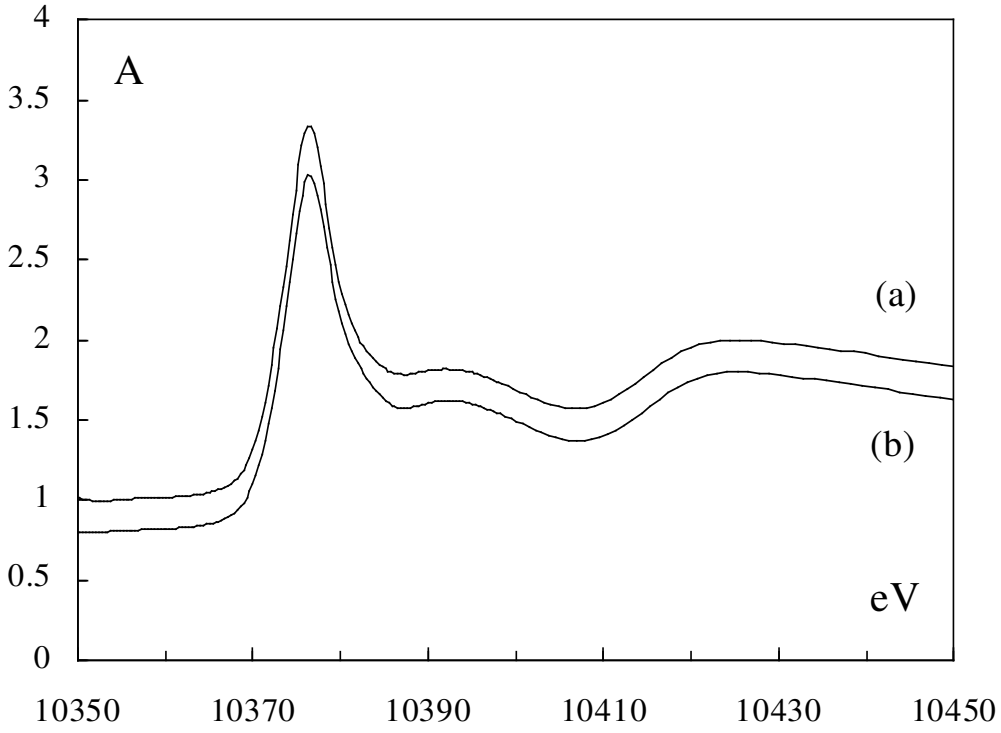

Figure S2a.

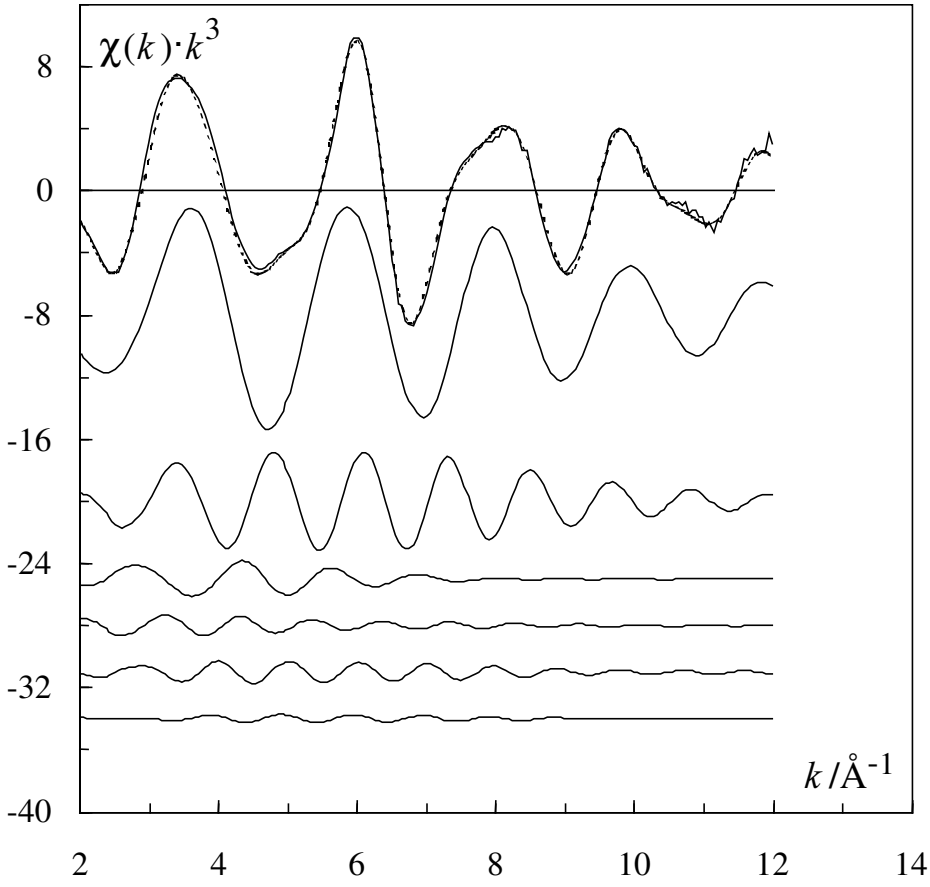

Figure S2b.

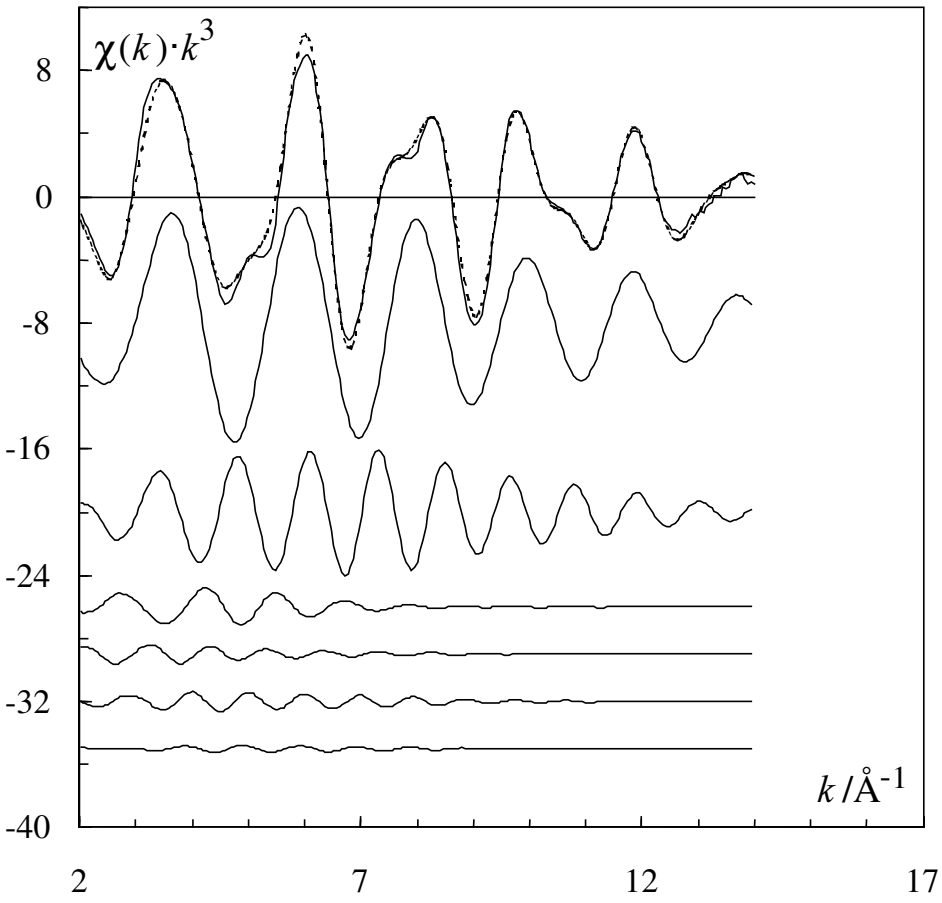

Figure S3.

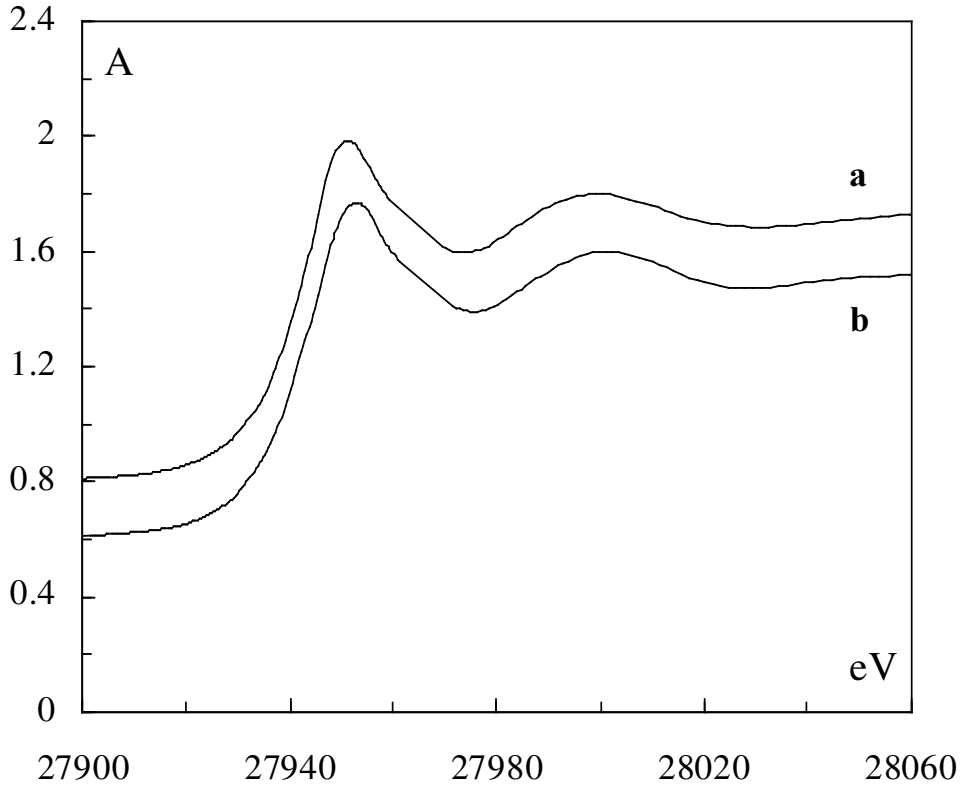

Figure S4a.

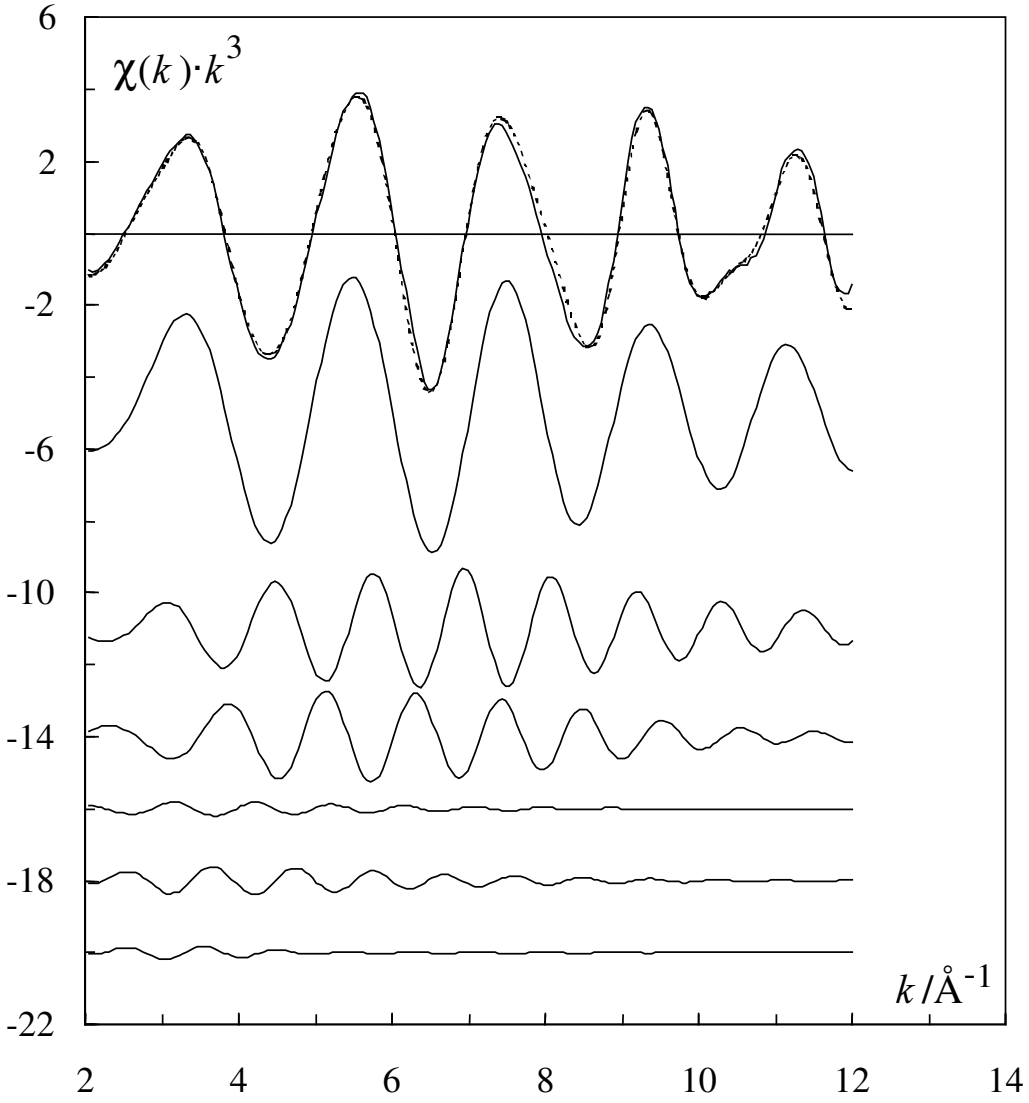

Figure S4b.

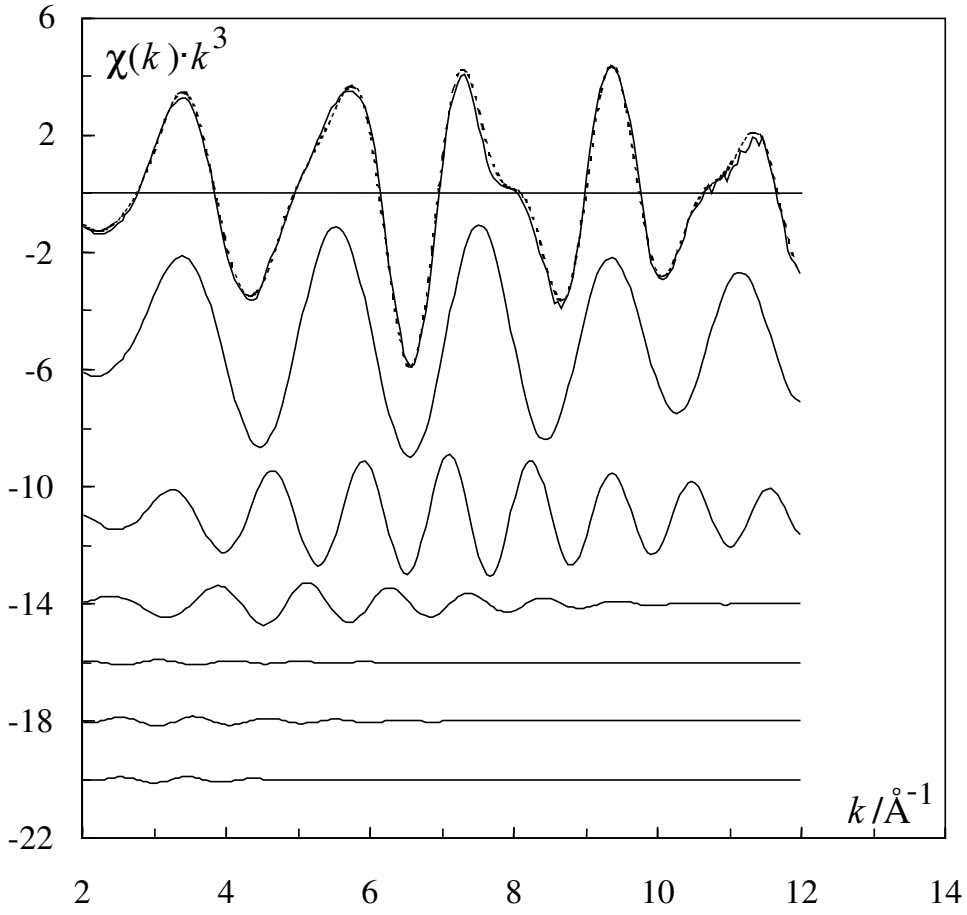

Figure S5.

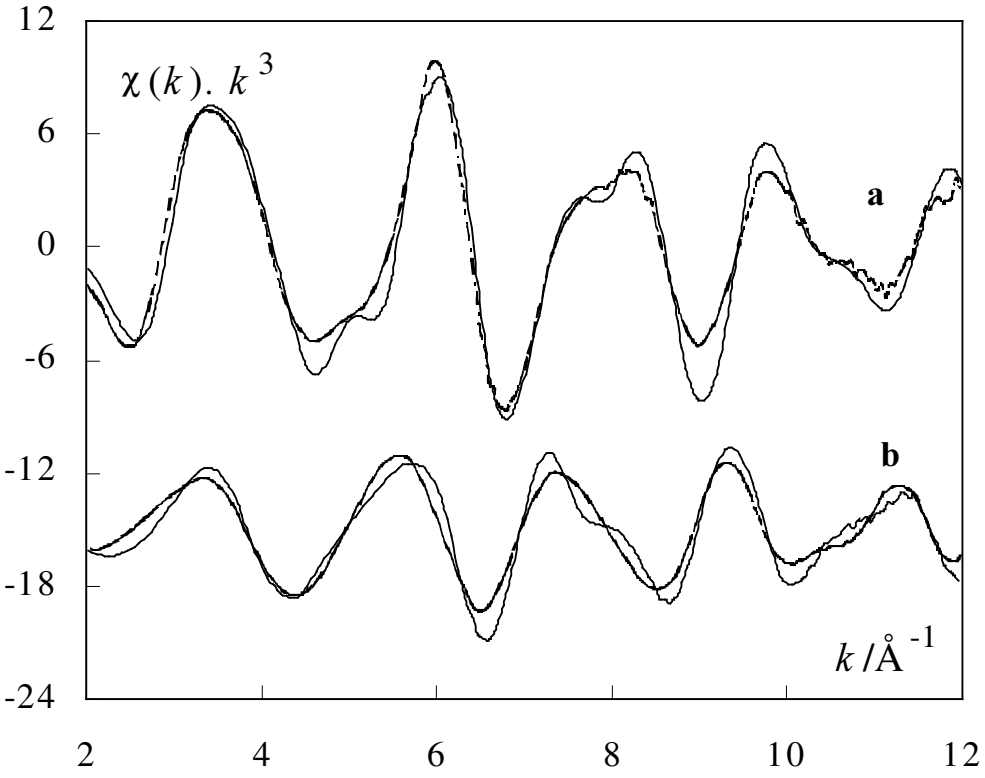

Figure S6.

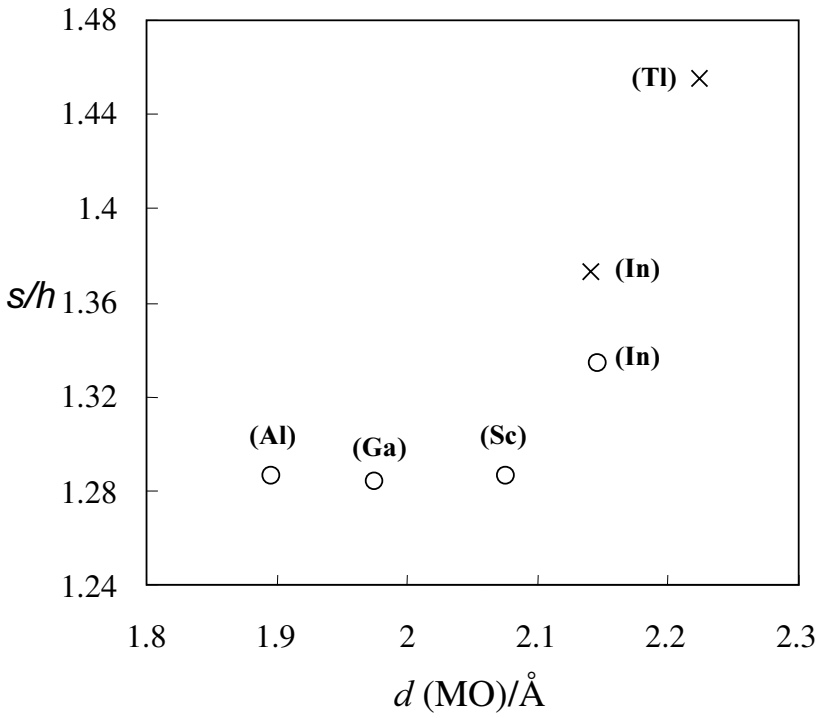

Figure S7.