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The effect of M (M=Ti, V) and A (A=Al, Ge) on thermal transport and heat capacity of nanolayered ternary carbides M_2AC[1]
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— We report an investigation of the specific heat and the thermal transport of a subset of the so-called MAX-phase family of materials: V_2GeC, V_2AlC, Ti_2GeC and Ti_2AlC. The thermal transport results are analyzed to investigate the impact of the A-group and M-element on the phonon contribution to the thermal transport. The heat capacity results are investigated to determine the impact of the same elements on the density of electronic states and the Debye temperature. We find that M-element has a more significant impact on the electronic density of states and the thermopower. The Seebeck coefficient is significantly larger in the V-containing carbides (it is nearly zero in the Ti_2AC compounds), although the sign is dependent on the A-group element. The A-group element has an expected impact on the Debye temperature due to the change in atomic masses, but the phonon contribution to the thermal conductivity is largest in the V_2AC compounds

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