Dysprosiumcarbidiodide $Dy_{10}(C_2)_2I_{18}$, $Dy_4(C_2)I_6$ und $Dy_{12}(C_2)_3I_{17}$ Dysprosium Carbide Iodides $Dy_{10}(C_2)_2I_{18}$, $Dy_4(C_2)I_6$, and $Dy_{12}(C_2)_3I_{17}$

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The title compounds are formed by reaction of DyI₃, Dy metal and C in stoichiometric amounts in closed Ta ampoules, Dy₁₀(C₂)₂I₁₈ at 930 °C for 7 days, Dy₄(C₂)I₆ at 950 °C for 6 days and Dy₁₂(C₂)₃I₁₇ at 900 °C for 11 days as pure samples according to X-ray powder diffraction. Dy₁₀(C₂)₂I₁₈ crystallizes in space group $P2_1/c$ with a = 10.470(2), b = 17.152(3), c = 13.983(3) Å and $\beta = 121.14(3)^\circ$, Dy₄(C₂)I₆ in *Pnnm* with a = 13.622(3), b = 14.335(3) and c = 8.396(2) Å, and Dy₁₂(C₂)₃I₁₇ in *C*2/*c* with a = 19.149(4), b = 12.069(2), c = 18.595(4) Å, and $\beta = 90.54(3)^\circ$. The crystal structure of Dy₁₀(C₂)₂I₁₈ is composed of Dy double octahedra centered by (C₂)⁶⁻ groups (ethanide) with the iodide ions above the edges and the corners of the Dy₁₀(C₂)₂ units. In Dy₄(C₂)I₆ the Dy atoms form chains of *trans*-edge sharing octahedra with embedded (C₂) groups. In the structure of Dy₁₂(C₂)₃I₁₇ alternately *cis-*, *trans*-edge-condensed Dy₆ octahedra centered by (C₂) groups occur. The iodine atoms surround the chains like in the M_6X_{12} cluster and interconnect neighboring chains.

Key words: Dysprosium, Carbon, Iodine, Ethanide, Cluster, Crystal Structure