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Design and discovery of a novel half-Heusler transparent hole conductor made of all-metallic heavy elements

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Transparent conductors combine two generally contradictory physical properties, but there are numerous applications where both functionalities are crucial. Previous searches focused on doping wide-gap metal oxides. Focusing instead on the family of 18 valence electron ternary ABX compounds that consist of elements A, B and X in 1:1:1 stoichiometry, we search

(C) ..., 15, A_{2} , A_{2} , A_{3} , A_{4} , A_{5} , A, (,) 18- AB AⁿB¹⁰ (8-n) (15, 9 17 (15, 18, 19) (16, 17) (16, 17) (18, 19) (16, 17) (18, 19) (16, 17) (18, 19) (16, 17) (18, 19) (16, 17) (18, 19)

16,17 18,19

16,17 18,19

AB ..., ()

A B ..., A ...

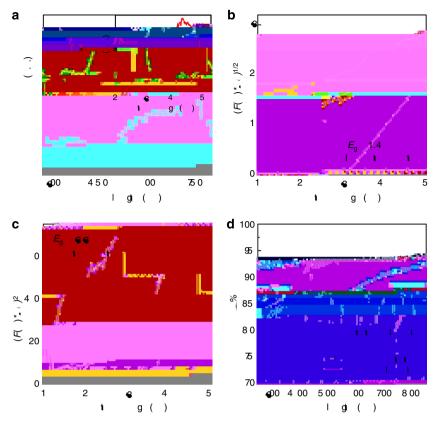


Figure 6 | Measured optical property of TalrGe semiconductor. (a) Optical spectra. The absorption spectra are obtained from the ultraviolet/visible diffuse reflectance spectra converted by the Kubelka–Munk²⁶ (

(~ 350 700).

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350 700 .

Discussion

P_{8,9} (. , ~ 10 ₹\mathbb{R}\mathbb{T} - 1 .

C A $_{2}$. 0.46 2 $^{-1}$. . . C $_{2}$ 2),

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