Binary substances X, Y, W (which are gaseous at normal conditions), contain element Z in their composition. The mass fraction of the heavier element in X, Y and W is 82.35%, 78.28% and 91.18%, respectively. X, Y and W have similar empirical formulas, but completely different properties, which leads to the fact that there are many interesting compounds at the junction of the chemistry of X, Y and W.

W and X do not interact under normal conditions, but by reacting X with substance C, salt B is obtained. Salt B contains the same cation salt X1, which results from the reaction of X with hydrochloric acid. Salt B is formally an adduct of X, W, and Y in a 1: 1: 1 ratio. W and Y react to form compound C containing a donor-acceptor bond.

Chlorination of Y produces gas Y1 containing the same number of atoms as W. Reaction of Y with sodium hydride gives a salt Y2 containing the same anion as salt A. Moreover, from 131 ml of Y (at 320 K and 745 mmHg), 370 mg of salt Y2 is produced. This salt, upon reaction with X1 in ether, produces a white solid D, which formally is an adduct of X and 1/2 Y. When this reaction is carried out with 1.31 g of Y2 and an equimolar amount of X1, only sodium chloride, a gas lighter than X weighing 0.069 g, and D is obtained. When heated, D loses about 20% of the mass to form the binary compound F.

The reaction of X and Y yields an ionic compound A, which contains a singly charged cation of complex composition, the structure of which is similar to the anion of salt B. A reacts with X1 in ether similarly to Y2, forming D and salt E, which is the chloride of the cation contained in A. The mass fractions of hydrogen and chlorine in E are 9.72% and 43.13%, respectively.

The substance W is easily oxidized by various substances. Thus, during chlorination and fluorination of W, higher fluoride W2 and higher chloride W1 are formed, and the mass fraction of the common element is 1.652 times greater in the fluoride than the chloride. W1 reacts with Y1 to form salt H, whose cation and anion have the same shape.

W1 also reacts with salt X1 in tetrachloroethane to form three-element oligomers (G)n, and by changing the reaction temperature (120 - 150 ° C) and the solvent composition, it is possible to obtain mainly cyclic trimer (G)3 or tetramer (G)4. When the trimer is heated to 200-300 ° C, polymerization occurs with the formation of (G)n, the molar mass of the monomer unit of which is 115.9 g / mol.

An unusual salt can be obtained from the fluorinating X on a copper catalyst, resulting in gas X2 containing as many atoms as W. When fluorinating a mixture of X2 and W2 in a 1:1 ratio, salt K is obtained, which contains 80.85% fluorine. The cation of salt K has 6 planes of symmetry, and the anion has both 9 planes of symmetry and a center of symmetry.

All described transformations are also shown in the diagram:
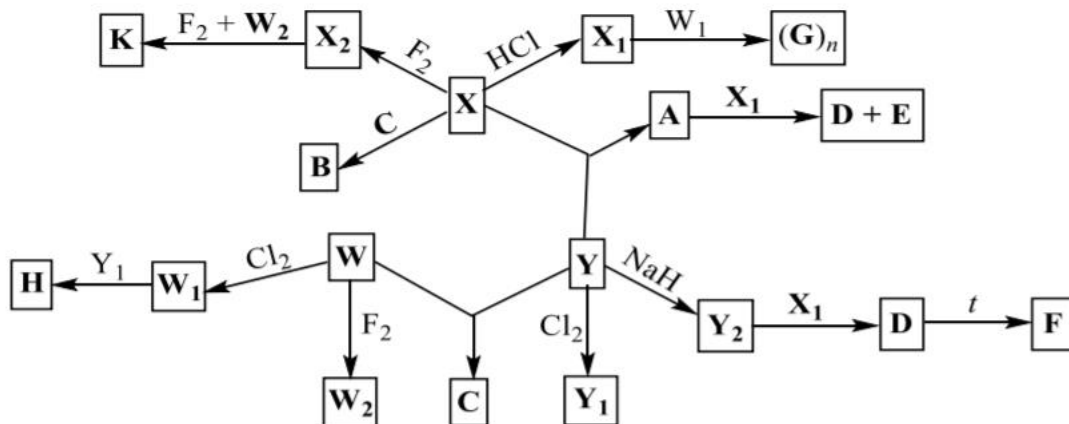
Given that X2 has density more than 2 times that of air, **write the formulae of all substances, using structural formulae where appropriate.**