

Task:

crystals of a substance changed their color on heating in a closed vessel but regained after sometimes, when they allowed to cool down.
name the substance

Answer:

Crystal hydrates – salts that contain coordinated molecules of water. When they are heated, they loose water molecules. But if the vessel is closed, water remains in the vessel (in the form of the gas). When the system is cooled, the water becomes liquid and is coordinated to the metal once more. Water molecules coordinated to the metal define the color of the substance. For example, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}(\text{blue}) \leftrightarrow \text{CuSO}_4(\text{s})(\text{white}) + \text{H}_2\text{O}(\text{g})$