

**STRUCTURE-PROPERTY RELATIONSHIPS AS A PRIMARY TOOL  
FOR ASSESSING THE CVD PRECURSOR PROPERTIES***Zherikova K.V.*<sup>(1)</sup>, *Zheravin A.A.*<sup>(2)</sup><sup>(1)</sup> Nikolaev Institute of Inorganic Chemistry SB RAS  
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Chemical vapor deposition (CVD) has an undeniable priority when geometrically complex objects should to be covered conformally. The efficiency of the CVD processes can be significantly increased by incorporating quantitative data on sublimation/vaporization ( $p$ - $T$  dependences) and the thermal behavior in the condensed phase (thermal stability, phase transitions) of the initial metal-containing compound (precursor). Clearly, these temperature-dependent parameters are largely determined by the structure of the compound. Therefore, identifying any structure-property relationships, whether qualitative or quantitative, can significantly facilitate the effective design of a precursor possessing the desired set of properties. This is especially important in cases where experimental data is unavailable. One of the few effective CVD precursors, (hexafluoroacetylacetonato)(cyclooctadiene-1,5)silver,  $[\text{Ag}(\text{cod})(\text{hfac})]_2$ , will be discussed as an example of compound with thermal properties which data are hardly-to-access on [1]. Another output of structure-property relationships is the validation of obtained and/or already existing thermodynamic data on solid-gas, liquid-gas, and solid-liquid phase transitions. This diagnostic benefit will be addressed by applying our original approach to a set of copper(II)  $\beta$ -diketonates [2,3]. Both metal compounds are used in CVD of Ag- or Cu-containing agents (nanoparticles/clusters/films) as a component of complex anti-bacterial biocompatible materials on the surfaces of cancer implants [4].

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