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G. Stringfellow

► **To cite this version:**

G. Stringfellow. THERMODYNAMIC ASPECTS OF ORGANOMETALLIC VPE. Journal de Physique Colloques, 1982, 43 (C5), pp.C5-17-C5-17. 10.1051/jphyscol:1982503 . jpa-00222222

**HAL Id: jpa-00222222**

**<https://hal.science/jpa-00222222>**

Submitted on 4 Feb 2008

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## THERMODYNAMIC ASPECTS OF ORGANOMETALLIC VPE

G.B. Stringfellow

*Department of Electrical Engineering, University of Utah, Salt Lake City, Utah 84112, U.S.A.*

**Abstract.**- Organometallic vapor phase epitaxy (OMVPE) is a new crystal growth technique which is rapidly gaining popularity due to its simplicity, flexibility and proven ability to grow excellent quality III/V compounds and alloys for device applications.

The fundamental aspects of OMVPE are only beginning to be understood. It is often classified as a "kinetically controlled" growth process. While this is true to some extent, thermodynamics play a major role overall. Two particular aspects of OMVPE growth of III/V ternary and quaternary alloys will be examined from a thermodynamic point of view :

1. Distribution coefficients in systems such as  $\text{InAs}_{1-x}\text{Sb}_x$  and  $\text{GaAs}_{1-x}\text{Sb}_x$  will be analyzed.
2. The occurrence of miscibility gaps in III/V systems, in particular observations and calculations of miscibility gaps in III/V alloys such as  $\text{InP}_x\text{As}_y\text{Sb}_{1-x-y}$  and  $\text{GaAs}_{1-x}\text{Sb}_x$  grown by OMVPE will be discussed.

In this paper experimental observations will be discussed in terms of calculations made using simple thermodynamic models of III/V solid alloys .