# ■ Development Project of “New Ti Precursors” Ver.2

## ☐ Target : $TiO_2$ & TiN

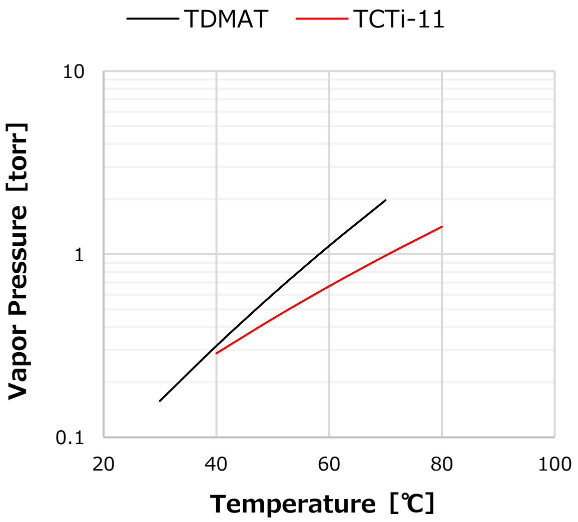
| Code Name | TCTi-11 |
|---|---|
| 1）TGA$_{1/2}$（℃） | 195 |
| Residual mass（%） | < 1% |
| 2）DSC（℃） | 279 |

**1）TGA（Thermogravimetric Analysis）：Volatility property of precursor**

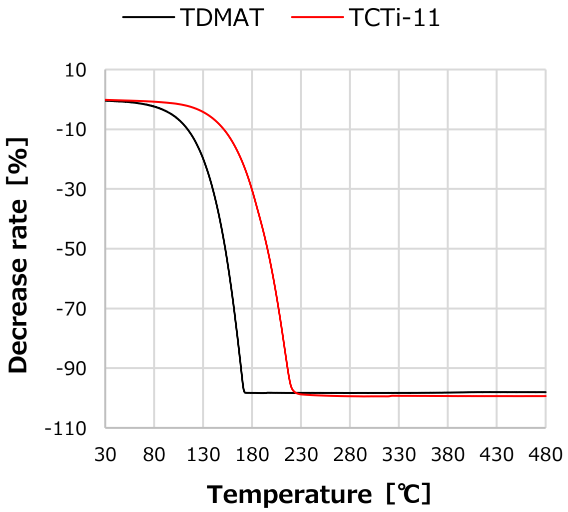
- **TGA$_{1/2}$（℃）**：Temperature at 50% vaporization（low temperature → high volatility）
- **Residual mass（%）**：Residue mass after vaporization（low value → good thermal stability）

**2）DSC（Differential Scanning Calorimetry）**
**：Decomposition temperature of precursor**

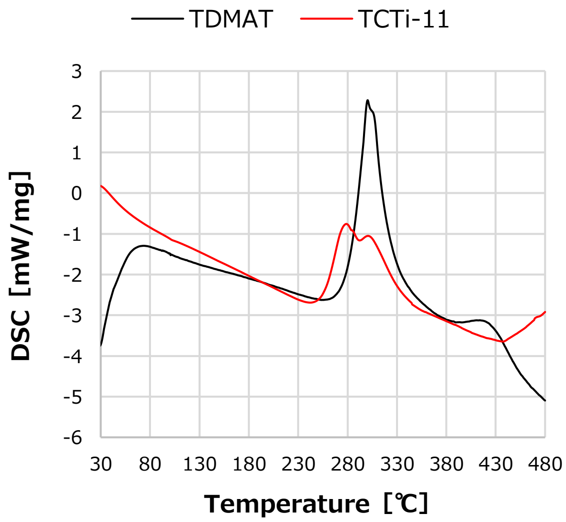
### ■ Vapor Pressure curve



### ■ TGA curve



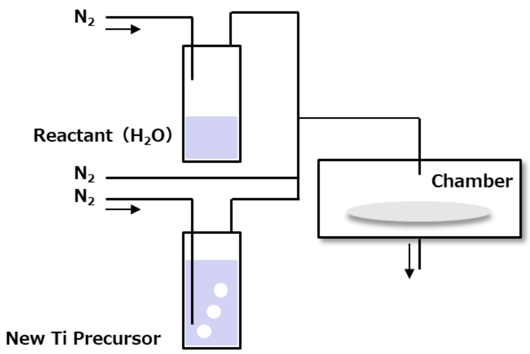
### ■ DSC curve



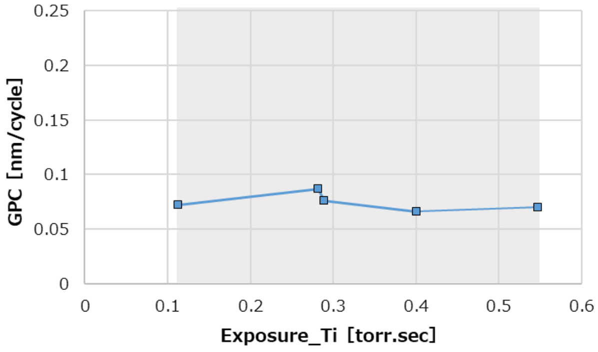
# ■ Development Project of “**New Ti Precursors**” Ver.2

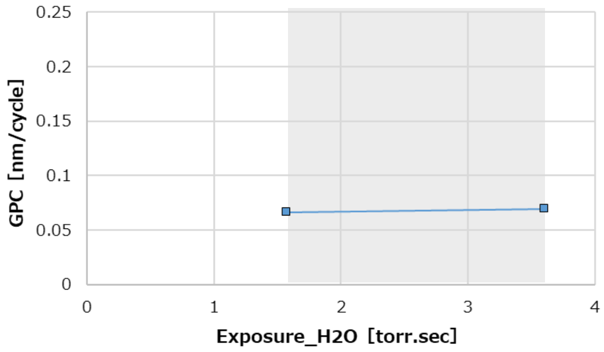
## □ ALD evaluation ～ TCLC ～

|  |  |
|---|---|
| **Precursor** | **TCTi-11** |
| **reactant** | **H2O** |
| **substrate** | **Si** |
| **Carrier gas** | **N2** |
| **Remark** | **TiO2** |

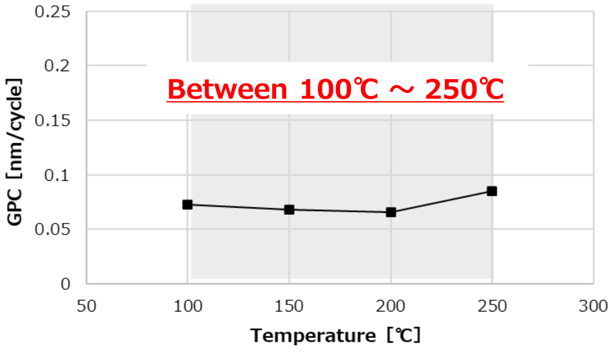


**[ ALD saturation curve ]**



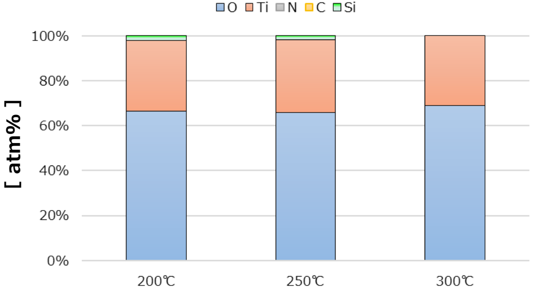


**[ ALD window ]**



Between 100℃ ～ 250℃

**[ XPS data ]**



C <0.01atm%

N <0.01atm%