

ビス(ベンゾイミダゾール)配位ニッケルジクロリド錯体によるピリジンの吸着挙動

(弘前大院理工¹⁾ ○村上 辰成¹・本間 貴大¹・増野 敦信¹・岡崎 雅明¹・太田 俊¹
Adsorption Behavior of Pyridine by a Bis(benzimidazole)-Coordinated Nickel Dichlorido Complex

(¹Grad. Sch. of Sci. and Tech., Hirosaki Univ.) ○Tatsunari Murakami,¹ Takahiro Homma,¹ Atsunobu Masuno,¹ Masaaki Okazaki,¹ Shun Ohta¹

Pyridine (py) is a volatile organic compound that has offensive odor. Inhaling py, humans can be affected by several symptoms such as headache and nausea.¹⁾ Therefore, the methods for adsorbing and/or detecting py vapor are required. In this presentation, we report that crystals of **1**²⁾ (Fig. 1) can adsorb py vapor with color change from purple to green (Fig. 2). Although the color change was not observed, the crystals were found to work as a py-adsorber even in low concentrations (Fig. 3).

Keywords : Nickel complex; Pyridine; Adsorption; Color change; Bis(benzimidazole) ligand

人がピリジン (py) を吸引すると、頭痛や吐き気などを引き起こす可能性がある¹⁾。そのため、py 蒸気の吸着/検出方法の開発が求められている。本研究では、Fig. 1 に示す錯体 **1**²⁾の結晶による py 蒸気の吸着挙動を調べた。

錯体 **1** の結晶を py 蒸気にさらしたところ、紫から緑へ色が変わった (Fig. 2)。粉末 X 線回折や紫外可視拡散反射スペクトルより、色変化が *trans*-[NiCl₂(py)₄]の生成によることを明らかにした。さらに、色は変化しないが、この結晶は低濃度下でも py 蒸気を吸着できることを確認した (Fig. 3)。

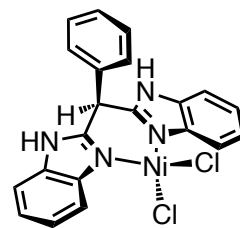


Fig. 1 Structure of **1**.

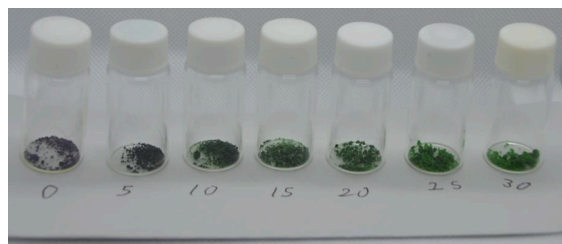


Fig. 2 Color change of **1**-containing solids under the pyridine vapor every 5 hours. Numbers in photo are time in the unit of hour that the solids were exposed to pyridine vapor.

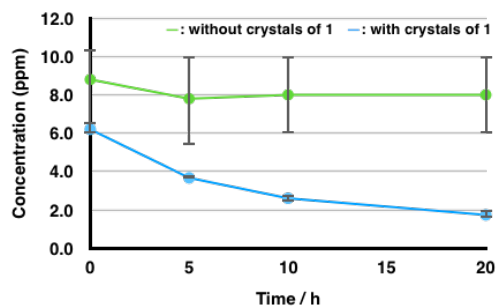


Fig. 3 Time dependent concentration change of pyridine. The points and the error bars indicate the average values and the maximum and minimum values of three independent experiments, respectively.

1) International Labour Organization (ILO), *International Chemical Safety Cards (ICSCs)*, <https://www.ilo.org/dyn/icsc/showcard.listCards3>, accessed 19 December 2022.

2) Ohta, S. *et al.*, *Cryst. Growth Des.* **2020**, *20*, 4046–4053.