

## **POJ011: Thursday 10<sup>th</sup> Nov. Requested Presentation**

### **Fabrication of amine contained PMMA nanofiber for detection and collection of toxic gas.**

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#### **Abstract:**

Nanofibers are the nano structure of high aspect ratio and easily fabricate the sheet-like materials. Their property of high specific surface area enables toxic gas to penetrate quickly into nanofibers. Therefore it is expected that nanofiber sheets are favorable to trapping material for toxic gas. In this paper, we prepared a novel amine contained polymer nanofiber mat and investigated their adsorption behavior of some gas phase toxic chemicals.

Nanofiber mat was fabricated with electrospinning method. Polymer nanofiber were made from PMMA, and dodecyl amine or polyaniline which were used for the binding reagent of toxic gas. Ratio of PMMA / amines were 99/1 – 75/25 (wt%). Adsorption behavior were investigated with quartz crystal microbalance (QCM) measurement and absorption spectroscopy.

SEM observation showed that nanofiber of uniform size is made in the case of the ratio of amine beyond 5 wt%. Meanwhile, the PMMA fibers produced from the PMMA/amine = 99/1 showed beaded-fiber morphology. In the QCM measurement, A frequency change was observed in contacting the organic vapor and hydrogen chloride to nanofiber mat equipped crystal oscillator. Changing in the absorption spectra of nanofiber mat were also observed in contacting some of toxic gases.