

## INTISARI

### KAJIAN NANOFIBER *POLYACRYLONITRILE* (PAN) SEBAGAI MATRIKS *3,4-ETHYLENEDIOXIOPHENE:POLYSTYRENESULFONATE* (PEDOT:PSS) UNTUK DETEKTOR GAS AMONIA

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Sensor gas memiliki peran penting dalam pendeteksian sejumlah gas berbahaya di lingkungan sekitar. Polimer konduktif PEDOT:PSS memiliki potensi untuk dimanfaatkan sebagai pendeteksi gas amonia. Nanofiber PAN, lapisan tipis PEDOT:PSS dan nanofiber PAN/PEDOT:PSS telah berhasil dibuat. Nanofiber PAN dibuat dengan metode *electrospinning*, lapisan tipis polimer PEDOT:PSS dideposit dengan metode *drop casting*, dan nanofiber PAN/PEDOT:PSS dibuat dengan cara *drop casting* PEDOT:PSS ke nanofiber PAN. Larutan PAN 6% w/w di *electrospinning* dengan parameter tegangan 5 kV, jarak antara ujung jarum dan kolektor 12 cm, dan diameter jarum 0,25 mm pada suhu lingkungan. Lapisan tipis PEDOT:PSS memiliki konduktivitas lebih tinggi dibandingkan lapisan nanofiber PAN/PEDOT:PSS. Hasilnya, lapisan nanofiber PAN/PEDOT:PSS lebih sensitif terhadap gas amonia daripada lapisan tipis PEDOT:PSS. Kedua lapisan tipis tersebut memiliki sifat reversibilitas yang berpotensi dijadikan pendeteksi gas amonia.

**Kata kunci:** PEDOT:PSS, PAN, *electrospinning*, konduktivitas, sensitivitas, pendeteksi gas amonia

## ABSTRACT

### THE STUDY OF POLYACRYLONITRILE (PAN) NANOFIBER AS MATRIX 3,4-ETHYLENEDIOXIOPHENE: POLYSTYRENESULFONATE (PEDOT: PSS) FOR AMMONIA GAS DETECTOR

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Gas sensors have an important role in detecting the amount of harmful gases in the surrounding environment. PEDOT:PSS conductive polymer has the potential to be used as an ammonia gas detector. PAN nanofiber, PEDOT:PSS thin film and PAN/PEDOT:PSS nanofiber were successfully fabricated using electrospinning method. The thin film of PEDOT:PSS polymer was deposited with drop casting method, and PAN/PEDOT:PSS nanofiber were produced using drop casting method of PEDOT:PSS to PAN nanofiber. PAN in concentration 6% w/w were produced in the voltage 5 kV, with tip to collector 12 cm and syringe diameter 0,25 mm in the room temperature. PEDOT:PSS thin film shows a higher conductivity than PAN/PEDOT:PSS one. But PAN/PEDOT:PSS nanofiber is more sensitive to ammonia than PEDOT:PSS nanofiber. Both nanofiber shows potential reversibility to detect ammonia.

**Keyword:** PEDOT:PSS, PAN, *electrospinning*, conductivity, sensitivity, ammonia gas sensor