

## عنوان مقاله:

Effect of dodeca-tungstophosphoric acid on morphology and performance of polyethersulfone membrane for gas separation

## محل انتشار:

دوازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1387)

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## نویسندگان:

S. S. Madaeni - *Membrane Research Center, Department of Chemical Engineering, Razi University, Kermanshah, Iran*

E. Rafiee - *Department of Chemistry, Razi University, Kermanshah, Iran*

Z Seyedzadeh - *Department of Chemistry, Razi University, Kermanshah, Iran*

## خلاصه مقاله:

In the present paper, organic/inorganic membrane has been prepared for gas separation by incorporating 12-phosphotungstic acid (PWA) into the base polymer. Flat-sheet composite membranes were produced via phase inversion method. The PVA/PWA skin layer was synthesized on the PES/PWA membranes as a sub layer, using dip-coating technique. The sub layers were prepared from quaternary (PES/PWA/DMAc/water) and ternary (PES/PWA/DMAc) systems by wet and dry techniques. The permeability and selectivity of H<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub> and air were tested. The morphology of the prepared membranes was investigated by scanning electron microscopy (SEM). The presence of PWA in the top and sub layers (2 wt.% to 6 wt.%) causes a great increase for the selectivity of H<sub>2</sub>/O<sub>2</sub> pair. This is related to decrease flux for O<sub>2</sub> and increase flux for H<sub>2</sub>. The presence of PWA particles in the network of PES membrane allows higher permeation of N<sub>2</sub> compared to O<sub>2</sub> molecules. The percentage of O<sub>2</sub> in the air is about 79%, this leads to that the flux of air is higher than O<sub>2</sub> and it is lower than N<sub>2</sub> gas. The performance of prepared composite membranes (sub layer prepared by dry procedure) with higher PWA concentration demonstrated better performance compared to the other compositions.

## کلمات کلیدی:

morphology; gas separation; polyethersulfone; polyvinylalcohol; polytungstophosphoric acid

## لینک ثابت مقاله در پایگاه سیویلیکا:

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