

## Advances in Reconstruction and Characterization of Disordered Carbonaceous Materials

(乱れた炭素系材料の再構築とキャラクタリゼーションの進展)

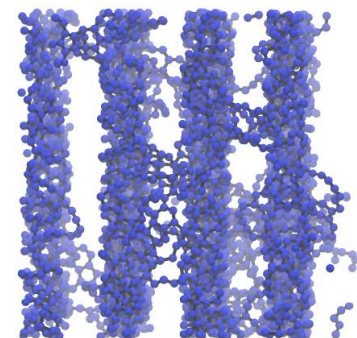
**Dr. Piotr Kowalczyk**  
(Curtin University of Technology, Australia)

日時: 8月27日(水) 11:00から

場所: 先導研演習室111号室

Aug. 27(Wed) 11:00- at Room 111, Building A

Carbon Molecular Sieve Film (CMS-F)  
Synthesized from Cellophane



Nanoporous disordered carbon materials (NDCs) attracted recently a considerable attention owing to their remarkable separation properties. NDCs are expected to play an important role in the development of novel energy-efficient membranes for separation of gas mixtures composed of light particles (e.g.,  $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{H}_2$ , He,  $\text{N}_2$ ,  $\text{O}_2$ ,  $\text{H}_2\text{S}$ , CO,  $\text{SO}_2$ , etc.). In my talk, I will present our novel approach devoted to reconstruction of the atomistic structural model of NDCs (i.e., two-phase ill-defined materials) from a set of distinct experimental measurements (e.g., wide angle X-ray scattering,  $\text{N}_2$  porosimetry and He pycnometry). Further, I will discuss the relationship between the nanoporous structure of NDCs (cellulose carbon film, CMS-F, synthesized in our laboratory) and the phase transformations of adsorbed molecules. Finally, I will show how to use atomistic structural model of CMS-F for prediction of adsorptive separation of model dry syngas ( $\text{H}_2/\text{CO}$  gas mixture) just using a laptop.