

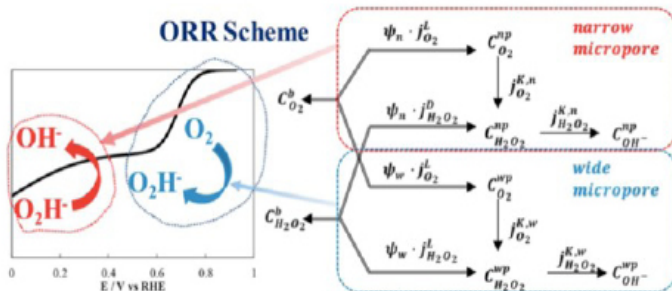
研究タイトル： エネルギー材料への展開を目指した  
新規炭素材料の開発



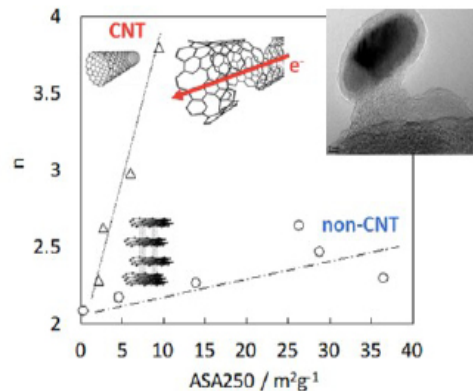
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職名：	講師	学位：	Ph.D.
所属学会・協会：	化学工学会, スペイン炭素材料学会		
キーワード：	エネルギー材料, 触媒, 燃料電池, 炭素材料, 表面化学, バイオマス		
技術相談	・燃料電池用触媒の合成、評価		
提供可能技術：	・ガス貯蔵材料の調製 ・炭素材料の評価		

研究内容： エネルギー材料への展開を目指した新規炭素材料の開発

エネルギーや環境問題に解決するべく新規多孔性材料に関する研究を行っている。近年、優れた導電性、機械特性、高い表面積を兼ね備えており化学的にも安定であることからカーボンナノチューブやグラフェンといったナノカーボンをベースとした機能性材料の研究が盛んである。カーボンの表面化学や細孔構造といった基礎的な特性は最終的な目的物の機能に大きな影響を及ぼすためそれらのナノレベルでの理解が重要になってくる。カーボンの構造をナノスケールで制御し更に様々な物質と組み合わせ高機能なハイブリッド材料を調製し水素貯蔵材料や燃料電池用触媒等への応用を目指している。



Schemes for the heterogeneous micropores (upper) and homogeneous micropores (bottom) models proposed for the mathematical description of the ORR mechanism of porous carbon material



ASA dependence of electron transfer number measured 0.7 V in  $O_2$ -saturated 0.1 M KOH solution at 1600 rpm for CNT based samples and non-CNT based samples. Inset photo is a thin deposit around the CoOx derived by PVP carbonization.

提供可能な設備・機器：

名称・型番 (メーカー)

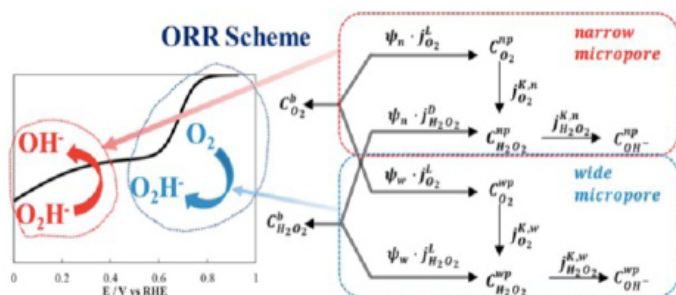

# Synthesis and characterization of carbon materials and their application of energy materials



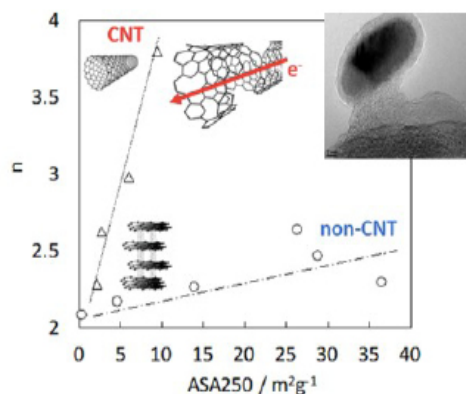
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Keywords	Energy materials, Catalysis, Fuel cell, Carbon materials, Surface chemistry, Biomass		
Technical Support Skills	<ul style="list-style-type: none"> <li>• Synthesis and characterization of electrocatalysts for Fuel cells</li> <li>• Preparation of gas storage materials</li> <li>• Characterization of carbon materials</li> </ul>		

Research Contents: Synthesis and characterization of carbon materials and their application of energy materials

Because of its desirable electrical and mechanical properties as well as large accessible surface area, new nanostructured carbon materials such as graphene and carbon nanotubes have widely contributed to design advanced nanomaterials. Fundamental understanding of physicochemical properties of carbons such as surface chemistry and porous texture are very important because of its significantly influence to the properties of prepared composites. Porous carbon materials are developed to solve the problems related to the energy and environmental issues. The structure of carbons could be controlled in nanoscale level and also synthesized with other to form hybrid materials. The prepared composites will be used for gas storage and cathodic materials for fuel cells.



Schemes for the heterogeneous micropores (upper) and homogeneous micropores (bottom) models proposed for the mathematical description of the ORR mechanism of porous carbon material



ASA dependence of electron transfer number measured 0.7 V in  $O_2$  – saturated 0.1 M KOH solution at 1600 rpm for CNT based samples and non-CNT based samples. Inset photo is a thin deposit around the CoOx derived by PVP carbonization.

Available Facilities and Equipment