

# **Overview of potential Gas shale in the Western Canadian Sedimentary Basin: geology, geochemistry, sorption capacity, and reservoir potential**

Sharleen Ramos\*  
Earth and Ocean Sciences, UBC, Vancouver, B.C.  
sramos@eos.ubc.ca

and

R.M. Bustin  
Earth and Ocean Sciences, UBC, Vancouver, B.C

## **ABSTRACT**

The variation in sorbed and free gas capacity of important potential gas shales in the Western Canadian Sedimentary Basin (WCSB) have been investigated. The methane and carbon dioxide sorption capacity of the Second White Specks, Belle Fourche, Dunvegan, Nordegg, Exshaw, and Duvernay Formations all increase with increasing organic carbon content and degree of organic maturity. The influence of kerogen type is less obvious. Overall there is an inverse correlation between sorbed gas capacity and intergranular (free gas) porosity.

The Belle Fourche and Dunvegan samples range in TOC content from 1 to 4 wt % and primarily contain terrestrial, type III organic matter and have sorption capacities up to 0.72 cc/g (24.7 scf/ton). The Duvernay, Nordegg, Exshaw, and Second White Specks samples range in TOC contents from 1 to 23 wt % and contain primarily marine, type II organic matter and have sorption capacities up to 1.95 cc/g (66.4 scf/ton).

The sorption capacity organic rich shales in the WCSB are as high or higher than many producing gas shales in the United States however to date the producibility of Canadian shales have not been tested.