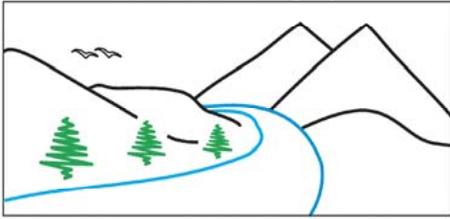


NRESi



"Our environment is our future"

## RESEARCH COLLOQUIUM SERIES

### Dr. Gerry Kutney

Chief Operating Officer  
Alterna Energy



**Friday**  
**Mar. 27, 2009**

**3:30 - 4:30**

**LECTURE THEATRE**

**7 - 238**

LIGHT REFRESHMENTS  
SERVED AT 3:20 PM

### Biomass → Biocarbon → Bioenergy & Bioproducts

Biomass has been the energy staple of mankind through the ages. Fossil fuels, such as coal and oil, have only superseded biomass for but a brief period. For example, the world did not burn more coal than wood until the beginning of the 20th century. Oil only came into its own later in the century. We are entering an era, where biomass is beginning to resume its traditional position. In the use of biomass as a source of bioenergy, the critical factor is energy density. Wood-based bioenergy was revolutionized through the development of wood pellets. Whereas green wood chips have an energy density of ~9.5 GJ/te, a wood pellet has nearly double this amount. Coal, though, is the standard solid fuel in regard to power production, which has an energy density of ~30 GJ/te. Biocarbon, while produced from the same type of biomass as wood pellets, has an energy density equivalent to that of coal, or over 60% higher than a wood pellet. Biocarbon, also called char or charcoal, is manufactured from any biomass through carbonization. There are many markets for the product including terra preta (agricultural applications), activated biocarbon, and energy pellets. There is especially much interest in the latter application as a renewable energy replacement for fossil fuels, such as coal.