ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
ΣΧΟΛΗ ΧΗΜΙΚΩΝ ΜΗΧΑΝΙΚΩΝ

ΕΠΙΤΡΟΠΗ ΣΕΜΙΝΑΡΙΩΝ, Καθηγητής Α. Κοκόσης

Ηρώων Πολυτεχνείου 9, Πολυτεχνειούπολη Ζωγράφου, Αθήνα 15780
Πληροφορίες: **Α. Μουντράκη,** Τηλ.:210 772 3129, Fax: 210 772 3228,
E-mail: mountrak@central.ntua.gr

ΣΕΜΙΝΑΡΙΟ ΧΗΜΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Παρασκευή 1 Απριλίου 2011, 13:00
Αίθουσα Σεμιναρίων «Ν. Κουμούτσου»

Patricia Harvey

Head of Bioenergy Research Centre, School of Science,
University of Greenwich, UK

Glycerol Power

Glycerol is a water-soluble, bio-degradable, odourless, non-volatile, non-toxic and non-flammable liquid that acts as a concentrated energy reserve in many aerobic living cells. However, it is now emerging as a highly important non-toxic biodegradable biofuel of the future, due to new breakthrough combustion technology that allows low cetane number fuels to be burned in compression ignition engines. Combustion using the so-called 'McNeil cycle' is more energy efficient than any known fossil-, bio- or synthetic fuel (34 – 37 % (10 – 30kW) and 40 – 42% (up to 1 MW)), and no combustion particulate is produced. Furthermore, since it has a high boiling point (290°C), and extremely low volatility (1mm Hg at 125.1°C), glycerol fuel stores can be safely used as thermal batteries for CHP applications. As such, glycerol lends itself to applications in marine auxiliary power, to improve the environmental and climate change footprint of existing ships.
Current annual production of crude glycerol from biodiesel manufacture in the EU is ~ 1 million tonnes for 2010. Sourced this way, the use of glycerol as a biofuel could increase pressure on supplies of plant oil. There is however, another source of glycerol which does not require chemical processing of triglycerides: this is glycerol synthesised de novo as an osmolyte in halotolerant microalgae, up to 80% of their mass in highly saline environments, depending on biological and environmental constraints. This paper examines the current status of glycerol in the context of sustainable bioenergy for the future.