

# Applied Geochemistry

Ferian Anggara

## Schedule and Outline

JADWAL KULIAH APPLIED GEOCHEMISTRY 52 REG, MGP & AUM  
 SM 113, 2018-2019  
 KULIAH REG INDONESIA & MGP SELASA (11.00-12.30, R 34)  
 KULIAH AUM KAMIS (09.00-10.30, R 34)

No.	MATERI	Februari			Maret			April			Mei			Juni							
		17	24	3	10	17	24	31	UTS	UTS	23	30	7	14	21	28	4	MT	UAS	UAS	
1	Dasar Kimia Organik & Geokimia HC	DHA																			
2	Geokimia Megas		DHA																		
3	Geokimia Bahubara			DHA																	
4	Biomineralisasi				DHA																
5	Geokimia HC Lingkungan					FA															
6	Geokimia HC Lingkungan						FA														
7	Geokimia Greenhouse Gas							FA													
8	Geokimia Greenhouse Gas																				
9	Geokimia HC Lingkungan																				
10	Geokimia HC Lingkungan																				
11	Geokimia Greenhouse Gas																				
12	Geokimia Greenhouse Gas																				
13	Ujian Akhir Semester																				

14 Mei libur kenaikan Isa Almas

Group 3

## Latar Belakang

- Penambangan *oil sand* di Kanada terdiri dari 3 pit (Athabasca, Cold Lake dan Peace River), yang semua berada di Provinsi Alberta.
- Dengan estimasi minyak sebesar 1,7 hingga 2,5 triliun *barrel* yang belum dieksplorasi, *oil sand* di Kanada ini merupakan deposit tunggal terbesar di dunia.
- *Oil sand* terdiri dari pasir, lempung, air, dan *heavy oil* yang proses ekstraksi dan penyulingan menghasilkan limbah polutan yang sangat banyak.

## Method of extraction:

- Primary production, surface mining, oil sand tailing pond, Cold heavy oil production with sand (CHOPS), Cyclic Steam Stimulation (CSS), Steam Assisted Gravity Drainage (SAGD), Vapor Extraction (VAPEX), Toe to Heel Air Injection (THAI), Combustion Overhead Gravity Drainage (COGD).
- Which one is the most efficient for producing oil? Why?
- Which one is the most environmentally friendly? Why?

	Primary Production	CHOPS	CSS	SAGD	VAPEX	THAI	COGD
Oil recovery (%)	5-6	10	10-40	60-70	Experimental method	Experimental method	Experimental method

Group 2

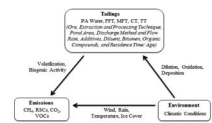
## Mining study

In mining activities, particularly oil sands mining in Canada, affected aspects besides the environmental and social impact of geography as well, namely the local geomorphology landform changes. Supposedly natural landscape of tectonic processes as well as other things, result in changes in the landscape.

### OIL SANDS MINING IMPACT

- ✓ Landform Changes
- ✓ Carbon Intensity
- ✓ Water Use
- ✓ Tailings
- ✓ Cumulative impacts

Source: <http://www.minesaction.org/our-work/2008-08-22/environmental-impacts-of-oil-sands-development-in-alberta>



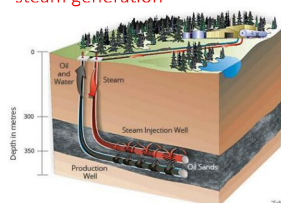
## Steam Assisted Gravity Drainage (SAGD)

### How SAGD works



## SAGD: Advantage and Disadvantage

- Recovery rates of 60-70%
- More economic
- The surface impact associated with SAGD operations is similar to that of conventional oil and gas operations
- A well pad surface disturbance is less than 10 per cent of the total resource area being accessed underground
- Consumes large quantities of water
- Use of water and natural gas for steam generation



End