

## CMP ONE-DAY SHORT COURSE

### Rare Earth Production: Beneficiation and hydrometallurgy

**Course Objective:** Rare Earth Elements (REE) are critical to modern, high-tech life. This course will explain where they come from and how they are extracted from rock and separated into the purified elements that go into the magnets used in hybrid vehicles, wind turbines, etc.; phosphors used in lighting and displays; catalysts; etc.

**Instructors:** Seasoned workers in the REE field:

- John Goode: General REE and separation plants
- Volker Moeller (Avalon Rare Metals and McGill): Geology and mineralogy
- Ben Yu (SGS): Beneficiation
- James Brown (SGS): Hydrometallurgy
- Grant Feasby (SENES): Waste management, social & official acceptance, permits

**Course outline:** The course will be divided into 6, one hour long, segments:

1. **Overview.** An overview of the REE industry will cover what the REE are, their uses, world production, and where Canada fits into the picture. (JRG)
2. **Geology.** This session will introduce attendees to where the REE are found, types of deposits, and the common and not-so-common minerals of importance. (VM)
3. **Beneficiation.** Comminution, ore sorting, flotation (often at high temperature), magnetic and gravity separation and pretreatments such as roasting and leaching will be described. (BY)
4. **Hydrometallurgy.** This session will deal with the processing of REE ore or concentrates to solubilize the REE purify the solutions and produce a mixed rare earth product. (JB)
5. **Separation.** REE have few uses as a mixture and are usually separated one from the other. Traditional and proposed methods of separation will be described. (JRG)
6. **Environment.** REE deposits may contain U and Th. REE plants are often intensive users of chemicals. Social and official acceptance of REE operations are discussed. (GF)

**Products/Course material:** Presentations and reference material will be e-mailed to students a few days before the Short Course. Hard copy will not be provided.

**Cost:** CAN\$400 per registrant

**Course venue and date:** Westin Hotel, Ottawa, Ontario. Sunday 17 January 2016.

**Course organizer:** Canadian Mineral Processors (CMP) society of Canadian Institute of Mining, Metallurgy and Petroleum

**Registration on-line at:**

<https://www.eventbrite.com/e/the-48th-canadian-mineral-processors-conference-tickets-16977784009>

Note that attendance at the CMP conference is not mandatory