AKE 3: Geothermal Energy

Time: Monday 12:00–12:30 Location: A 151

Invited Talk AKE 3.1 Mon 12:00 A 151

Deep geothermal fluid resources: Energetic use and beyond — •Harald Milsch — GFZ German Research Centre for Geosciences, Telegrafenberg, D-14473 Potsdam, Germany

Unlike countries with or close to volcanic areas Germany is not blessed with high temperature geothermal resources at shallow depths. However, also there deep geothermal energy can yield a significant contribution to the future renewable energy mix once a number of scientific and technical challenges have been overcome. Apart from improved exploration strategies required to drill into productive reservoirs these challenges predominantly relate to characterizing and appropriately handling the energetic resource itself, the geothermal fluid. This fluid, rarely, is simply pure water but rather a compositionally complex aqueous solution containing various dissolved solid and gaseous species at high concentrations that can range up to 300 g/L and several Nm3, respectively. Consequently, a number of fluid-rock-materials interactions may occur when hot fluids are produced from the reservoir, their heat is extracted at the surface, and the cooled fluids are injected back into the formation during a geothermal energy cycle. In this contribution these interactions, the related physico-chemical processes, and ways to control these will be reviewed. Also, it will be discussed to what extent the fluid is valuable beyond heat energy as it relates to the dissolved elements and compounds it contains.