

Silica in the Geothermal Energy Industry

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As the supply of fossil fuels diminishes, society will be forced to take advantage of alternative sources of energy. Many governments fear taking major steps to pursue alternate energy sources because of the great costs associated with research in these new fields. In 2001, Brookhaven chemist Mow Lin discovered a process to extract silica from brine, a byproduct of geothermal energy production. For this achievement, Brookhaven National Laboratory won the R&D 100 Award. The ability to remove practically pure silica will have grand effects on the energy industry. Because a useful, profitable product can be derived from the production of geothermal energy, many governments may be encouraged to pursue additional research and expansion of geothermal energy. In addition to acting as a replacement for the fossil fuels, geothermal energy is environmentally friendly. The expanded use of geothermal energy will help impede the deterioration of the environment.

Geothermal energy is energy that comes from the heat within the earth. Most of it is acquired through drilling in geothermal reservoirs, areas deep under the earth's surface where water is heated to high temperatures by surrounding magma. Different types of power plants, depending on the type of reservoir, can transform the hot, steamy water into electricity or other types of energy. Geothermal energy is a promising source of energy for the future. Generating geothermal energy does not require the use of any fossil fuels. This is an important point, because the supply of fossil fuels is dwindling. In addition, the burning of fossil fuels emits dangerous pollutants into the Earth's atmosphere. These emissions, including carbon dioxide, carbon monoxide, and nitrogen oxides, have contributed to global warming and air pollution; the recovery of fossil fuels, through mining and oil drilling, have led to water and land pollution. Geothermal power

plants are also independent of the weather, meaning they can function at all times. From a political and economic point of view, geothermal energy is also very beneficial. It can be manufactured domestically, therefore, its sales are independent of foreign politics, international transportation, and middleman price inflation.

Despite these benefits of geothermal energy, minimal money has been used to utilize this source. The process developed by Mow Lin could help change this. This process extracts silica that is 99.9% pure from brine, a byproduct of geothermal energy production, previously considered a waste. It uses the basic scientific principle of precipitation in order to precipitate the silica out of the brine. Silica is a versatile product; it is used to make concrete and other building materials, lubricants, and computer chips. Silica sand is also used to manufacture glass. If it has more availability, even more uses may be found for it. However, the most common process of producing silica is very expensive.

Yet, the new process would permit geothermal energy producers to simultaneously produce silica. Demand for silica is high, and if the geothermal energy producers could provide this resource at a cheaper price, people would choose to purchase silica from the geothermal energy producers. The revenue from the sale of silica would increase the profits of geothermal energy producers, allowing them to expand. Expansion would create more jobs and make geothermal energy available in more areas. If people replace fossil fuel energy with geothermal energy, the amount of pollution from the burning of fossil fuels would decrease. Therefore, the increased use of geothermal energy, due to the extraction of silica from geothermal energy production, would benefit the environment.

The new process to extract silica from brine, a byproduct of geothermal energy production, could have a major impact on society. Silica will be more available, meaning that additional uses may be found for it and current uses improved. The geothermal energy industry will become more profitable, due to the sale of silica, allowing the industry to grow and expand. The expansion of this industry would help fight the dependence on fossil fuels, because people will be able to use this alternative energy source. The decreased use of fossil fuels will benefit the environment by decreasing the pollutants emitted from the burning of fossil fuels. A cleaner environment means a improved life for humans and all living things.

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