

ChE 579 Graduate Seminar
Monday April 10, 2017 at 3 p.m. in KB401

**Energy, Society and a Short Introduction to
Energy Systems**

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The world energy demand increases as the world becomes more populated and as the energy consuming household appliances, electronic devices and transportation vehicles are used more often. The rise in the energy demand of Turkey through years is even sharper than most of the other countries; such that, the annual gross electricity demand of Turkey increased from 15.6 TWh in the year 1975 to 252.0 TWh in the year 2014 (multiplied by a factor of 16.2 in this time interval). Although most of the energy is still supplied by fossil fuel based sources (petroleum, natural gas and coal), they are expected to end in the future and they are harmful to the environment. Besides, fossil fuel resources are highly clustered in a few countries, and those countries without such resources must import these to meet the ever-growing energy demand within the country, which causes foreign dependency. Thus, most of the governments launched renewable or sustainable energy programs encouraging the use of solar, wind, geothermal, biomass based energies or even nuclear energy to reduce the foreign dependency on fossil fuels. In the first part of the presentation, I would like to talk about the relation between energy and society. Then, I would like to talk about the formation of fossil fuels, recovery of petroleum and conventional energy systems. Finally, I want to introduce some important renewable energy technologies and systems such as solar, wind, geothermal and bioenergy systems.

SHORT BIOGRAPHY

Dr. Mehmet Erdem Günay is an assistant professor in the Department of Energy Systems Engineering at Istanbul Bilgi University. He got his PhD degree from the Department of Chemical Engineering at Bogazici University. His research interests are catalyst design; modeling, simulation, and optimization of energy systems; forecasting energy and electricity demand using data mining techniques; renewable energy technologies including solar, wind, and bioenergy systems.