Advanced methods for soil and water remediation

During this seminar, recent advances related to soil and water remediation shall be discussed. Cold atmospheric plasma (CAP) is an advanced oxidation process (AOP) which could be considered a sustainable and efficient method for the removal of pollutants from contaminated soil. Dielectric barrier discharge/DBD reactors differing to electrode configuration (cylinder-to-plane and plane-to-grid) were constructed and used to remove solid and liquid pollutants (e.g. NAPLs, pesticides, pharmaceuticals, etc.) from soil layers. The low power consumption achieved reveals that the DBD-CAP is a well-promising technology for the cost-effective remediation of contaminated soils. On the other hand, recent routes towards the cost-effective wastewater remediation are also discussed. A CAP-based approach for wastewater remediation for the removal of different classes of pollutants (e.g. toxic dyes, pesticides, pharmaceuticals, etc.) has been followed. In parallel, towards the same goal, photocatalytic processes (ZnO, TiO_2 as photocatalysts) and bio-adsorbents prepared from agricultural waste materials used in their natural form or after minor physical activation, will be presented as wastewater treatment methods.