Editorial

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Published online: 12 December 2010
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The trend observed along this year is confirmed in this last issue of 2010. The origin and topics of the papers published are very diverse within the field of waste and biomass. Numbers of papers are oriented to the valorization to energy and useful materials while some are focused on related issues such as the characterization and the indicators for environmental assessment.

Grigiente et al. have investigated the pyrolysis of several wastes such as polymers (PE, PVC, PS), sewage sludge, tyres, waste wood as spruce sawdust and the successive stabilization of the residues. Two steps pyrolysis-vitrification process was considered to exploit the heating power of the resulting gas phase and to solve the environmental impact related to heavy metals. Analytical and energetic analysis is proposed for these waste streams. The production of solid biofuel from agricultural wastes of the palm oil Industry using hydrothermal treatment has been considered by *Yuliansyah* et al. The changes in the solid composition and carbon functional groups following upgrading were identified by FTIR and ¹³C NMR. The utilization of the GC–MS technique allows for better understanding of the decomposition of the gas and liquid products from the treatment of agricultural waste. *Ochoa George* et al. have investigated valorization of sugarcane juice filtration residue (filter cake) for energy production. The experiments show that filter cake with bagasse can be combusted in industrial boilers in sugar factories, giving a new economic value to the filter cake, and reducing its environmental impact. *Trippe* et al. have addressed a case study in Germany on a technological and economic

analysis of fast pyrolysis process for the conversion of biomass into a so-called biosyncrude consisting of pyrolysis liquids and char. The biosyncrude can be further processed to synthetic fuels via pressurized entrained flow gasification, gas cleaning and synthesis in biomass-to-liquid (BtL) fuel production. The main conclusion is that the technological and economic analysis of the pyrolysis plant with a capacity of 100 MW thermal energy input shows that it is possible to produce the biosyncrude in Germany at a cost of about 35 €/MWh compared to 22 €/MWh for natural gas or 15 €/MWh for coal which are inputs for coal-to-liquid (CtL) and gas-to-liquid (GtL) processes.

Other topics addressed in this issue of the journal are related to waste. So, *Itskosa* et al. have presented a study on outcomes of the 2-decade monthly monitoring of fly ash composition in a lignite-fired power station in Greece. A particular attention has been paid on the variation of sulphur (%) in feedcoal. The results show that fly ash would not often meet the specifications to be used in the production process of concrete, due to the excessive percentage presence of SO₃. These predictions were confirmed in the 23 years of operation of the power station. During these years SO₃(%) kept alternating, rendering -in some cases- fly ash suitable for use in cement industry applications. The periodical changes of the SO₃ concentration in fly ash were attributed to the free (volatile) sulphur of feedcoal as well as to the excess of FeS₂, which had also a serious effect on the daily power production process (severe erosion of the metallic surfaces of boiler). Separation process has been studied by *Froelich and Maris*. They have worked on sorting of mixed polyolefins from end-of-life product by a selective grinding process. Specific particle size distributions characterize each polymer in the output stream and these differences are used to recover certain polymers by

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sifting. The results obtained show that selective grinding can be an efficient technology to sort incompatible polymers, which are not sorted by other processes, such as density separation or automated near infrared sorting. Mine tailings is another waste stream addressed in this issue of the journal by *Pollmann* et al. The case of South Africa is discussed since mining is a key sector for the economy of this country. The presented research examines the potential of the addition of a variety of organic products acting as a nutrient source and soil ameliorant in contaminated platinum and gold tailings and in turn allowing the indigenous species—*Searsia lancea* (L.f.) F.A. Barkley to grow despite high levels of contamination. With the use of ameliorants for waste valorization, the results show that waste mine tailings material can be changed into a resource with a market value. *Melita and Gumrah* have addressed the transport of vanadium (V) and nickel (II) from wastewater using activated composite membranes based on carrier Aliquat 336, in cyclohexane and dodecane. The selectivity of Aliquat 336 based ACM towards V(V) and Ni (II) is presented and discussed. Selectivity demonstrated that vanadium ions were removable from mixtures due to the different extraction strength of Aliquat 336. Such selectivity is based on the difference in dynamic behaviour of the metal ions transport. *Baclocchi* et al. have studied the carbonation of stainless steel slag as a process for CO₂ storage and slag valorization. The objectives of this work were essentially to assess the CO₂ uptake achievable by each type of slag under mild operating conditions and to investigate the effects of carbonation on the mineralogy and leaching behaviour of the residues. The conclusion was that Argon Oxygen Decarburization slag was the most reactive material with CO₂. Milling, however, proved

effective in increasing the carbonation yield of the Electric Arc Furnace slag compared to that measured for the different size fractions of the commingled slag mixture. The last paper of this issue deals with assessment tools. *Cifrian* et al. have discussed the indicators for valorization of municipal solid waste and special waste in Spain. Indicators are important tools that assist decision-makers in formulating and implementing plans for the management of waste at local, national and international levels. Two groups of indicators are defined; the first one evaluates the valorisation of different components of municipal solid waste: treatment of municipal solid waste, recycling of glass packaging, recycling of paper and cardboard, valorisation of light packaging and energy produced from municipal solid waste. The second one evaluates the valorisation of different kinds of special waste with other kinds of treatments applied to this special waste: treatment of construction and demolition waste, C&DW, used tyre management, production and disposal of municipal wastewater sewage sludge, MWSS, and collection and management of waste electrical and electronic equipment waste.

The forthcoming issue of the journal will confirm the trend observed in 2010. Theme issues on various hot topics related to waste and biomass will be proposed in 2011. We are awaiting contributions from all continents as interest continues to grow in research on waste and biomass valorization. International awareness on environmental issues will lead to more efforts focused on handling of waste and new developments concerning the valorization of biomass. Contributors to our Journal should be proud to participate in this exciting and usefull endeavour.