



UNIVERSITÀ DI PARMA

DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE E INFORMATICHE

<http://smfi.unipr.it>

Notizie

SEMINARIO

Data: **martedì 8 gennaio**, ore **15**

Luogo: **Aula D**, Plesso di Matematica

Relatore: Dott. **Giorgio Martalò**,
Dip. SMFI, Università di Parma

Titolo: **Modeling and control of biodegradation processes in composting cells**

Tutti gli interessati sono invitati a partecipare,
Prof.ssa Maria Groppi

Abstract: A well established research field in the waste management concerns the mathematical description of the organic matter degradation. Starting from a paper of Lin et al. (2008), we introduce a mathematical model for the composting process in biocells, by including several biological phenomena, like the aerobic biodegradation of the soluble substrate, the hydrolysis of the insoluble one and the biomass decay. A key role is played by the oxygen that, in absence of external operations, is set to be consumed. An optimal control problem is formulated to determine the best aeration strategy guaranteeing the aerobic feature of the process. Possible inhibition effects in over aerated systems will be also considered as well as the bioeconomic aspects of the aeration process.