

# RECYCLING & WASTE MANAGEMENT

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## Composite material recycling by solvolysis - Energetic and thermal approach of the process

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Composite material production leads to wastes production and also leads to end-of-life wastes. Their management is a crucial problem to ensure the sustainability of the sector of the composite material made with organic matrix. Hence, since ten years, researchs on composite material recycling are carried out in our laboratories. Thus, three ph-D theses were defended referring to recycling by solvolysis. These works carried out news results on thermal mechanisms and on energy balance occurring during composites solvolysis process, with no equivalent in our bibliographic study. In this presentation, we will focus particularly, first, on the

energetic approach of the solvolysis phenomenon. To this end, differential scanning calorimetric approach was used. The main result of this work is that the most important observed phenomenon is the condensation of the water vapor when pressure increase inside the reactor. In a second time, to be sure of these results, a reactor and samples were instrumented by thin thermo couples (diameter 100 $\mu$ m) to record the temperature evolution during the processes of solvolysis. These last experiments prove that the sample is the locus of exothermic reactions.

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