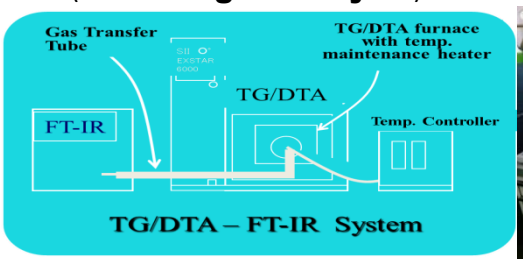
EGA(Evolved gas analysis) : TG + FT-IR

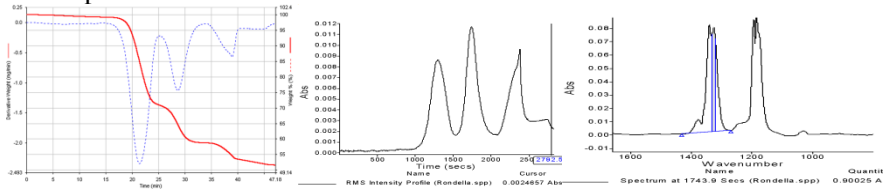


- **Enable identification of gas evolved from TG.**
- **Gas Transfer System like FT-IR, MS, GC/MS could be selected**

TGA is a VERY ACCURATE QUANTITATIVE ANALYSIS: wecanalsomeasureeasily verylittleloss (or gain) of the sampleweight	***FT-IR is a VERY ACCURATE QUALITATIVE ANALYSIS: wecaneasilyidentify the sample WITH ITS FINGERPRINT expeciallywith SPECTRUM 100!***

In the polymer field, the TG-IR is more commonly used in order to evaluate:
- the polymer degradation
- the materials safety and toxicity
and especially
-identification of the polymer, when it is difficult to do this with the simple

Asamplefrom a customer: thissampleis made of twopolymers, Bariumsolphate and a lot of carbon black.One of the twopolymersis a **nylon**, but itis impossible to view the spectrum of the second one, because the nylon spectrum and the **carbon black**prevent the viewing. In the TGA analysisweclearlysee**three principal decompositions**: the big one is the **pirolysisor the nylon**;
the last one is the **decomposition of carbon black**. So, **the second** one is the decomposition of the **unknown**



Finally, weidentify the gaswith the Sadtlerdatabases:

0.955 EL2933 ETHYLENE, TETRAFLUORO-,
0.955 V06502 ETHYLENE, TETRAFLUORO-,
0.954 GS0082 TETRAFLUOROETHYLENE

Then the lostpolymeristeflon.

DSC DIAMOND PERKIN-ELMER (2006)

Universitatea de Vest din Timişoara
CENTRUL DE CERCETARE
"ANALIZE TERMICE ÎN PROBLEME DE MEDIU"
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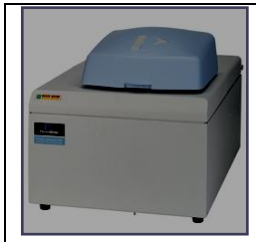
Facilităţiexperimentale:

- **TG/DTA/DTG Diamond Perkin-Elmer (2006)**
- **DSC Diamond Perkin-Elmer (2006)**
- **TMA Perkin-Elmer (2006)**
- **Spectroscop FT-IR Spectrum 100 Perkin-Elmer (2006) + EGA (evolved gas analysis)**
- **Multiscop FT-IR Microscop Perkin-Elmer (2007)**

Expertiză:

- **Analiza termică (pierderea de masă, efectul termic, identificarea produşilor volatili rezultaţi la termodegradare sau termooxidare prin EGA)**
- **Analiza comportarii termice si termomecanice a materialelor**
- **Analiza impactului asupra mediului la descompunerea termică a deşeurilor de polimeri, deşeuri menajere, ambalaje, soluri poluate, şlamuri şi nămoluri**
- **Predicţia timpului de viaţă termică pentru polimeri industriali, medicamente, aditivi alimentari.**
- **Determinarea contaminanţilor din soluri (Microscopie FT-IR) –în special produse petroliere**
- **Spectroscopie FT-IR (gaze, solide lichide) –identificarea substanţelor organice**
- **evaluarea compatibilităţii ecologice a tehnologiilor chimice şi altor activităţi ce utilizează produse chimice**



- **Effect of recyclates on thermoplastics**
- **‘Good’ versus ‘Bad’ materials**
- **Softening and melting temperatures**
- **Percent crystallinities**
- **Compositional analysis of blends**
- **Injection molding performance**
- **Thermal histories**
- **Trouble-shooting information**
- **Analysis of competitive materials**

- **Long term stabilities**
- **Onset of curing**
- **Maximum rate of cure**
- **Cure kinetics and lifetime predictions**
- **Polymer blend compatibilities**
- **Measuring Effect of Plasticizer on Polymers**
- **Use of DSC to Characterize Recyclates**
- **Oxidation Induction Time Test**

TG/DTG/DTA DIAMOND PERKIN-ELMER (2006)

- **Compositional analysis (oil, polymer, carbon black of elastomers, for example)**
- **Degradation onset temperatures**
- **Flammability studies**
- **Product lifetime predictions**
- **Engine oil volatilities**
- **Soot analysis of diesel oils**
- **Measurement of filler content**
- **Compositional Analysis of Additives in Polymers**
- **Compositional Analysis of Elastomers**
- **TGA for Assessment of Flame Retardant**

TMA DIAMOND PERKIN-ELMER (2006)

- **Softening temperatures**
- **Heat deflection temperatures**
- **Expansion coefficients**
- **Brake linings**
- **Coatings**
- **Composites**

FT-IR SPECTRUM 100 PERKIN-ELMER (2006)

- **Identifications of compounds (solid, liquid, gas), mixtures, impurities**
- **Databases for compound identification**

Multiscop FT-IR Microscop Perkin-Elmer (2007)
Measure the smallest areas of samples
Visually inspect a sample microscopically and then isolate the areas of interest
Confidence that the IR measurements is actually measuring the sample you want to measure
Often requires little or no sample preparation
Fewer operator mistakes
Different measurement modes (single point, multiple points, area map)
Enables heterogeneous samples to be studied easi