The background of the slide features a large, vibrant green plant with broad leaves, growing out of a clear glass pot. Overlaid on this image are several semi-transparent digital elements: a network of glowing blue lines and dots, several rectangular frames containing smaller images of plants, and various icons including a bar chart, a magnifying glass, and a document with a checkmark. A hand is visible on the right side, interacting with the digital interface.

## **CIRAM**

### **ANALYZES AND CERTIFIES**

### **BIOBASED CONTENT**

# CIRAM

Laboratoire



Biosourcé



✓ A skilled team dedicated to our customers

✓ International position

✓ 2 fields of activities:

Radiocarbon



Other isotopes





2004 : establishment of CIRAM by Richard CHERET and Olivier BOBIN

2006 & 2007 : Oséo & Aquitaine Entreprendre prizes

2011 : establishment of CIRAM Corp. in New York

2012 : partner office in Hong Kong

2014 : new head office in Martillac (near Bordeaux, France)

2015 : new laboratory in Martillac

2017 : new radiocarbon laboratory



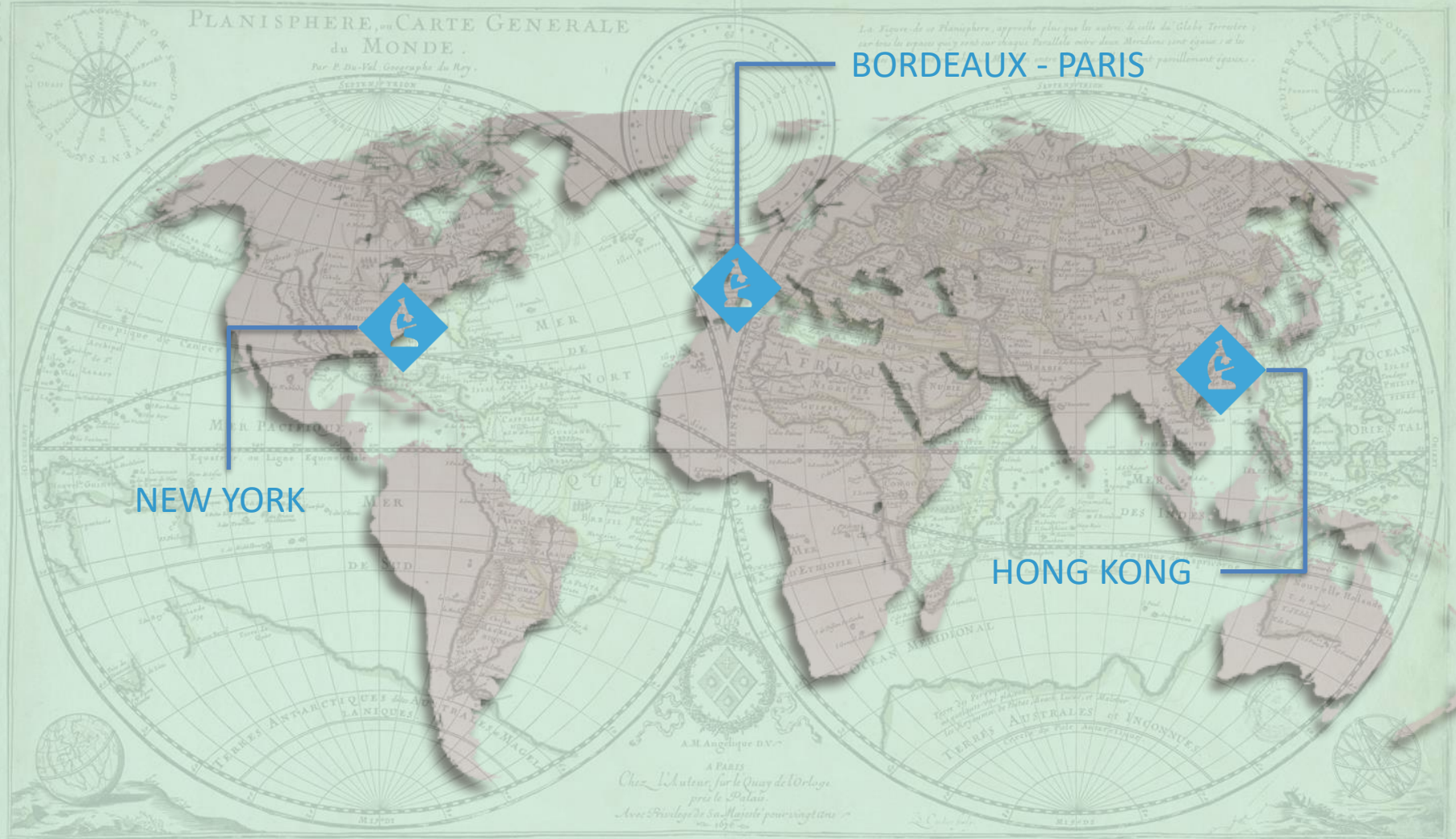
# CIRAM

Laboratoire



Biosourcé

## INTERNATIONAL OFFICES



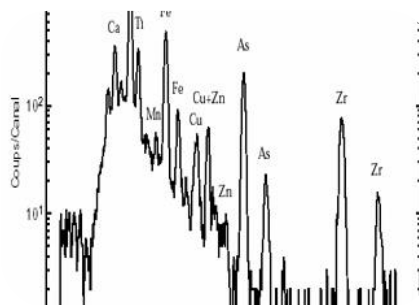
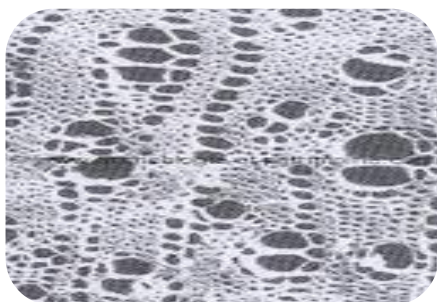


## BIOBASED : WHAT USE?



- ✓ **Quantification**  
*% of modern carbon (natural) vs old carbon (synthetic)*
- ✓ **Control : are your raw ingredients biobased?**  
*batches, new suppliers, raw ingredients, formulations, adulterations, at all stages of your process*
- ✓ **Certification : what % of biobased in your end product?**  
*to obtain ecolabel*
- ✓ **Authentication : is the allegation true? Is it biobased?**
- ✓ **Regulatory and normative conformity**

## ANALYSIS



- ✓ **RADIOCARBON**  
*% of modern carbon (pMC)*
- ✓ **Micronanalysis (microscopy and chemical analysis)**
- ✓ **Xylology (wood anatomy) and anthracology**
- ✓ **Raman spectrometry**
- ✓ **Traces elements (PIXE, ICP-MS)**
- ✓ **IRTF spectrometry and chromatography**





## RADIOCARBON ASSETS



- ✓ **No pre treatment of the sample**  
*the sample is transformed into pure carbon (graphite)*
- ✓ **Small quantity**  
*only a few mg or mL are enough*
- ✓ **Great capacity**  
*+ 80 samples per week*
- ✓ **Low limit of detection**  
*0,3% of carbon*
- ✓ **High precision**  
*Uncertainty rate of 0,1% et 0,5%*
- ✓ **Cost effective**



## EXAMPLES : WHAT IS THE CONTENT OF BIOBASED?



**ADDITIVES - PIGMENTS**

**PACKAGING**

**BIO POLYMERS**

**BIOFUELS**

**CONSTRUCTION MATERIALS**

**BIOTEXTILES**

**COSMETICS**

**MEDICAL**

**FOOD ADDITIVES**  
**FOOD SUPPLEMENTS**  
(essential oil, food coloring, natural aromas...)

**$^{14}\text{C}$**





- ✓ High level
  - 8 scientists (doctors,engineers)
  - High level of investment
  
- ✓ Timeline:
  - Quote within the day
  - Results and reports from 5 to 10 days
  - Debrief of the result if necessary
  
- ✓ International norms applied
  - ISO 16128
  - ISO 16620
  - ISO 17728
  - ASTM D6866

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