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FTIR spectroscopic study of an organic/mineral composite for bone and dental substitute materials.

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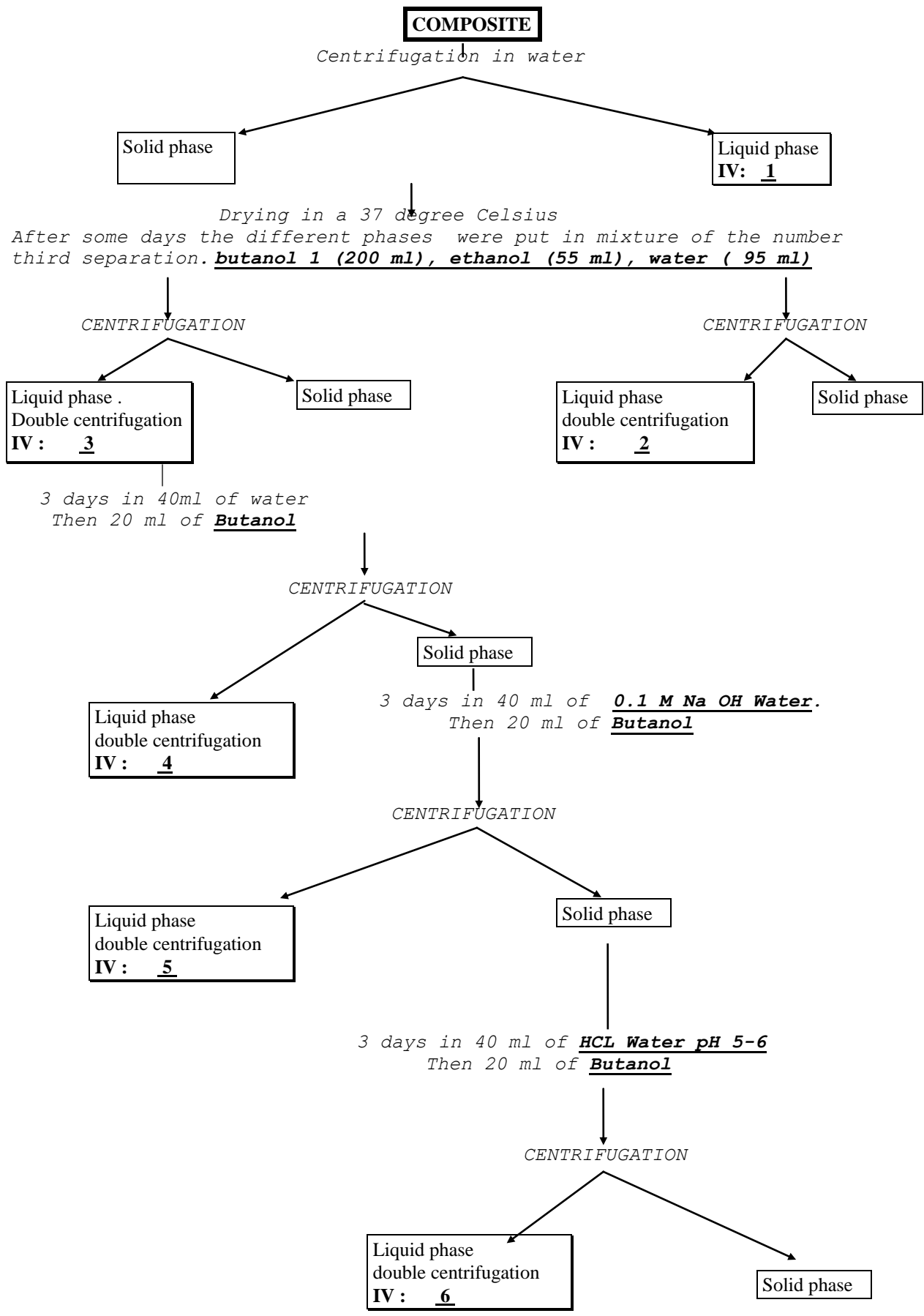
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<i>PEAK</i>	<i>Possible assignments</i>	<i>References</i>
712	Peak of carbonates --> MINERAL	11
870- 874	absorption of C-O in CO ₃ ²⁻ --> MINERAL	13 -11
1000-1200	C-O alcohol and C-O-C ---> ORGANIC	15 - 14 -19 - 18 - 20
1225-1235	Vib de def plane de OH et COOH	15
1250-1500	CH ₂ CH ₃ ----> ORGANIC	14 -18 - 16 - 15
1360 - 1450	Weaker symmetric COO stretching vibration	14
1410 - 1420	absorption of C-O in CO ₃ ²⁻ --> MINERAL	13 - 11 -12
1460	absorption of C-O in CO ₃ ²⁻ --> MINERAL	13 - 12
1540 - 1650	Strong asymmetric COO ⁻ stretching vibration	14
1550 -1900	C=O	14
1563 - 1667	Stretching vibrations of the COO ⁻	20
1592	COO ⁻ Salt formation	20
1667-1724	Carbonyl C=O Oxidation	20
1724 - 2000	C=O stretching	20 - 15
1795	small peak of carbonates --> MINERAL	11
1754	C=O monosaccharides	18
2700 - 3000	CH CH ₂ CH ₃ ----> ORGANIC	17- 15 - 14 - 18

Minerals fillers	pH
BCP 1	11
BCP 1 W	9-10
BCP 2	6
HA	8
OHAP	10

pH/medium	T0	T1	proton consumption mol.l ⁻¹
water	9,03	9,00	-6,64E-11
BCP 1g/20ml	8,77	10,62	1,68E-09
Ca(OH) ₂ 0.1M	11,96	12,40	6,86E-13
NaOH 0.1M	11,62	12,48	2,06E-12
NaOH 1M	13,00	13,17	3,27E-14

Presence of	T0			T1			T2		
	<u>COO⁻</u>	<u>C=O</u>	<u>Mineral*</u>	<u>COO⁻</u>	<u>C=O</u>	<u>Mineral*</u>	<u>COO⁻</u>	<u>C=O</u>	<u>Mineral*</u>
BCP	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
HA				No	Yes	No	No	Yes	No
OHAP	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

* CaCO₃

separation number:		IV- 1	IV- 2	IV- 3	IV- 4	IV- 5	IV- 6	
FILLERS	TIMES	Water	Mixture of alcohols + water	Mixture of alcohols + water	Butanol + water	Butanol + alkalin solution	Butanol + acidic solution	TOTAL
BCP 1 pH :11	T0	Yes		Yes	Yes	Yes	No	4/5
	T3		Yes	No	Yes	Yes	Yes	4/5
BCP 1 W pH : 9-10	T2		Yes	Yes	Yes	Yes	No	4/5
BCP 2 pH : 6	T1		No	No	No	Yes	No	1/5
HA pH : 8	T3		No	No		Yes	No	1/5
OHAP pH : 10	T0	Yes		Yes	Yes	Yes	No	4/5
	T3		No	No	Yes	Yes	Yes	3/5
TOTAL		2/2	2/5	3/7	5/6	7/7	2/7	

PRESENCE OF COO PEAKS				
	T0	T1	T2	T3
BCP 1	0			1
BCP 1 W			0	
BCP 2		0		
HA				1
OHAP	0			3

PRESENCE OF C=O PEAKS				
	T0	T1	T2	T3
BCP 1	1			2
BCP 1 W			3	
BCP 2		4		
HA				2
OHAP	4			4