



“Borosilicate phase separated glass for GICs: incidence of the addition of K, Al and Ca”

F. Lizzi, C. Villat, P. Jackson, I. Campbell, N. Attik, B. Grosogogat, C. Goutaudier

UKSB 2016

30th June and 1st July

PhD student presenting:
Federico Lizzi

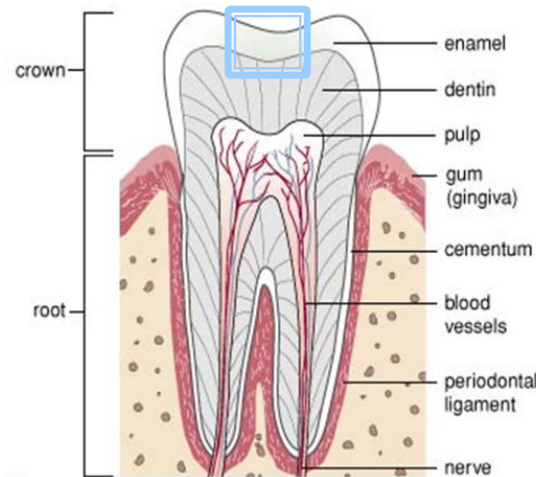


This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°264817

GLASS IONOMER CEMENTS

APPLICATIONS:

- Luting
- Restoration
- Liners and bases
- Pit and fissure sealant
- Orthodontic cements
- Core built up



© 2006 Merriam-Webster, Inc.

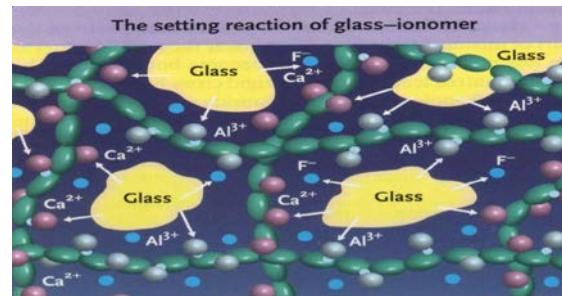
PROPERTIES:

Strongly bound to the tooth
Release of Fluoride
Application without tooth pre-treatment

IONOMER GLASS
POWDER

+

POLY(ALKENOIC
ACID)

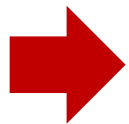


GLASS MELTING & PHASE SEPARATION

Samples	composition wt%				
	SiO ₂	K ₂ O	B ₂ O ₃	Al ₂ O ₃	CaO
PSBS 1	45	15	22.456	7.183	10.36
PSBS 2	45	15	26.22	3.38	10.39
PSBS 3	45	15	25	0	15
PSBS 4	45	15	20	11.5	8.5
PSBS 5	45	15	20	5	15
PSBS 6	45	15	26.22	3.38	10.39
PSBS 7	45	15	25.88	8.11	6
PSBS 8	45	15	34	0	6
PSBS 9	45	15	30.272	0	9.728
PSBS 10	45	15	25.88	8.11	6
PSBS SBK	45	15	40	0	0

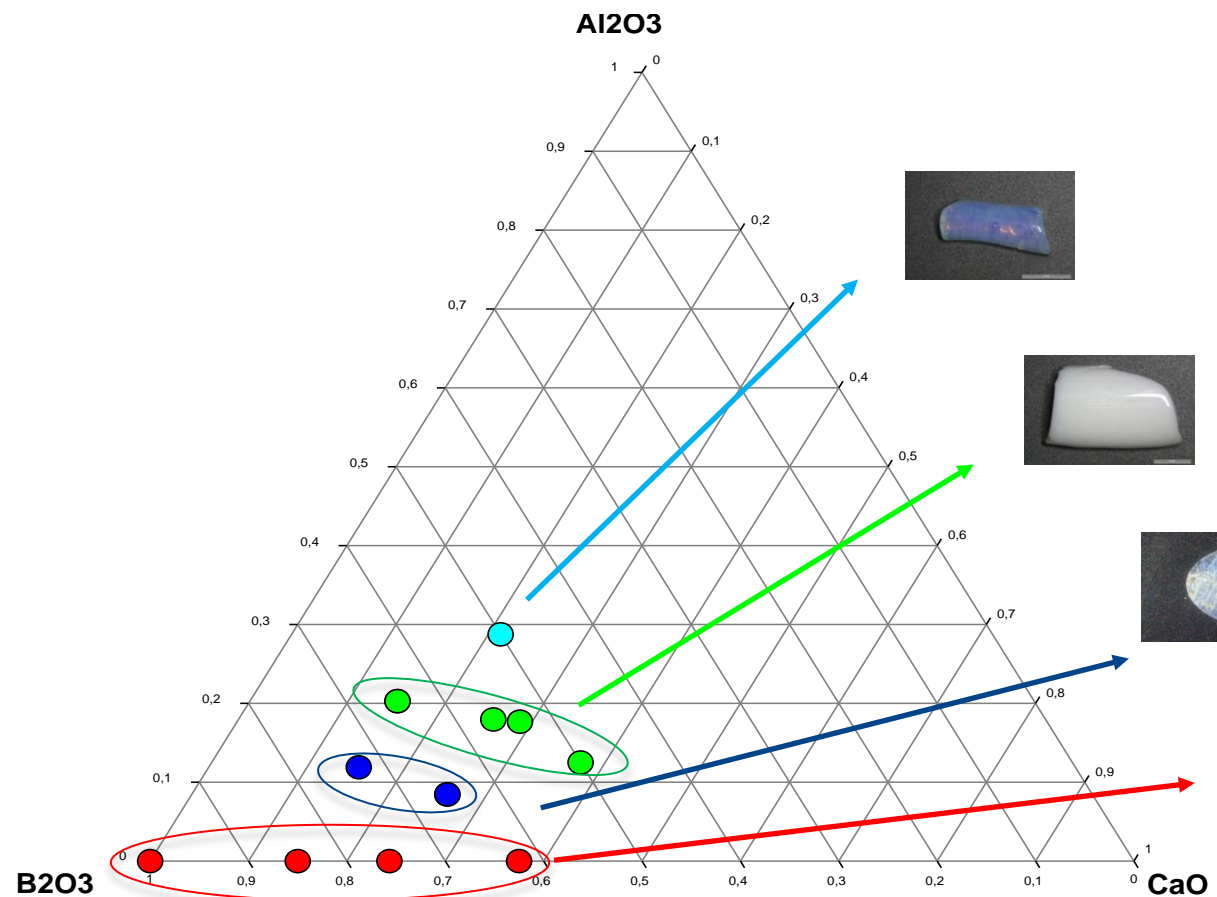
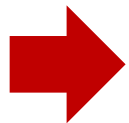
EXAMPLE OF PHASE SEPARATION

PSBS1



Heat treatment at 700°C

PSBS3





BIO DENSOL



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°264817

ANALYSIS PERFORMED & FUTURE PROSPECTIVES

Analysis performed:

- XRD
- PARTICLE SIZE DISTRIBUTION
- DSC/TGA
- BET
- ACID DISSOLUTION & ICP
- EDX SPECTROSCOPY

Final objective: Studying the relationship between the glass structure and the ions leaching for developing an ideal ionomer glass for GICs.

THANK YOU FOR YOUR ATTENTION

