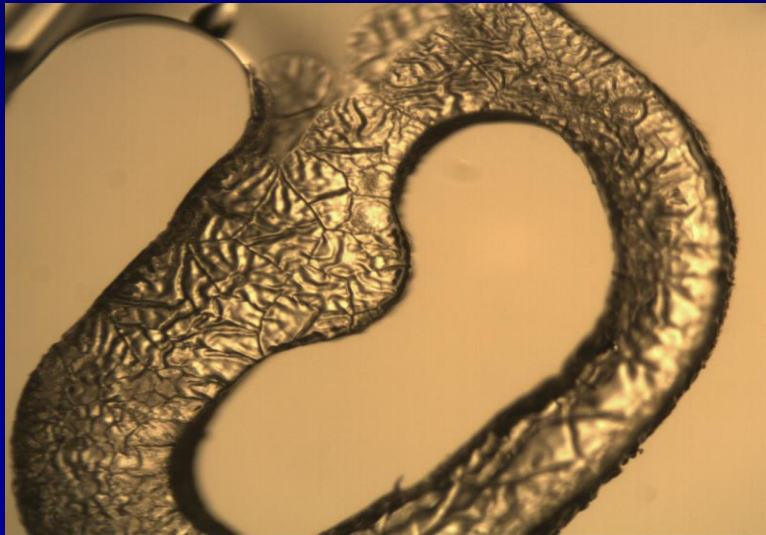


Different Patterns of the Hydrophilic Intraocular Lens Opacification.

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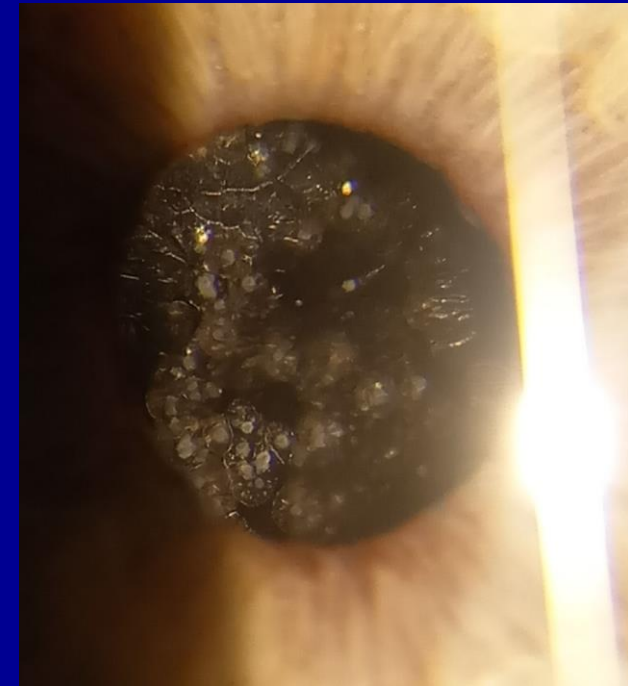
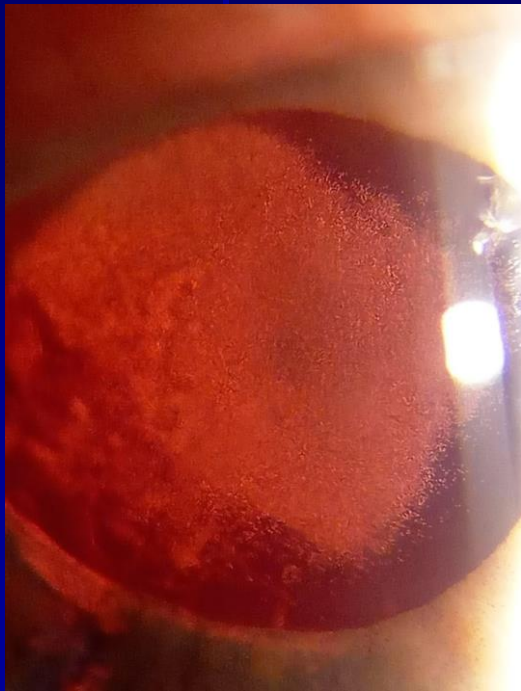
The authors have no financial interest in the subject matter of this presentation

Purpose&Methods

Describe characteristics of hydrophilic IOL opacification

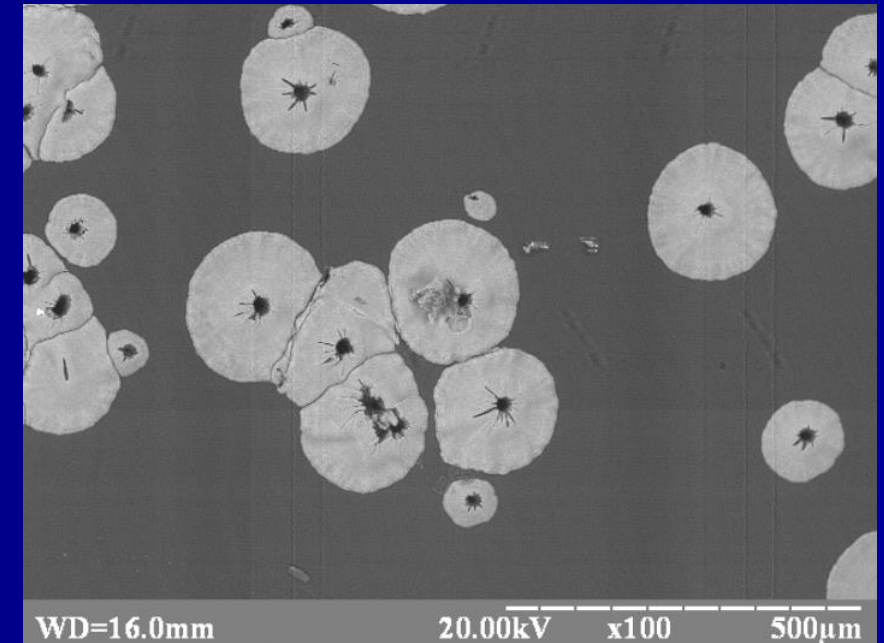
Explanted IOL was examined

- Light microscopy (MT8500 Meiji Techno, Japan)
- Scanning electron microscopy
- Energy-dispersive X-ray spectroscopy (PEM-106I Selmi, Ukraine)
- Alazarin Red staining



Results

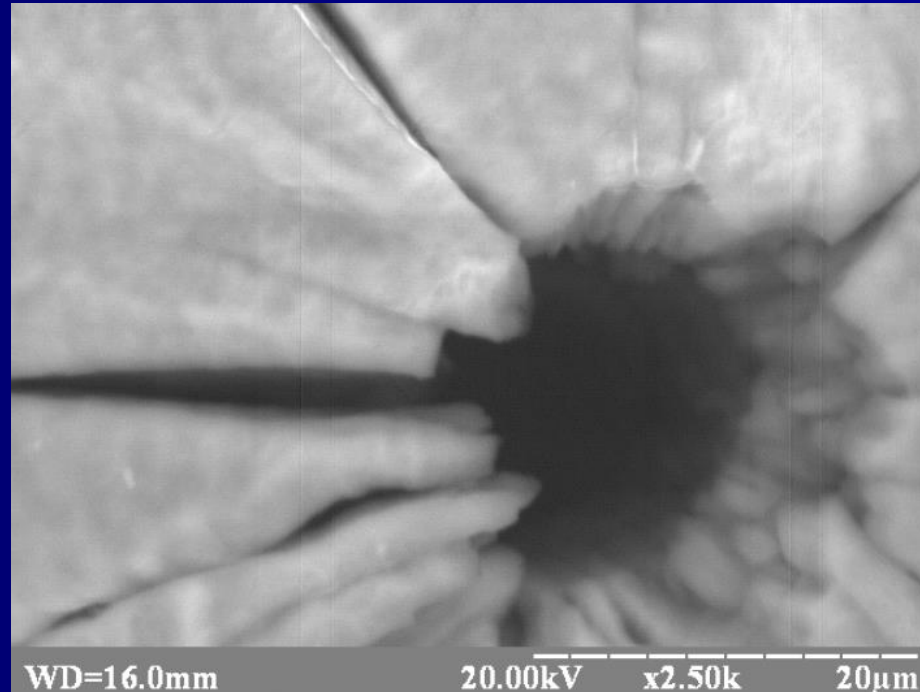
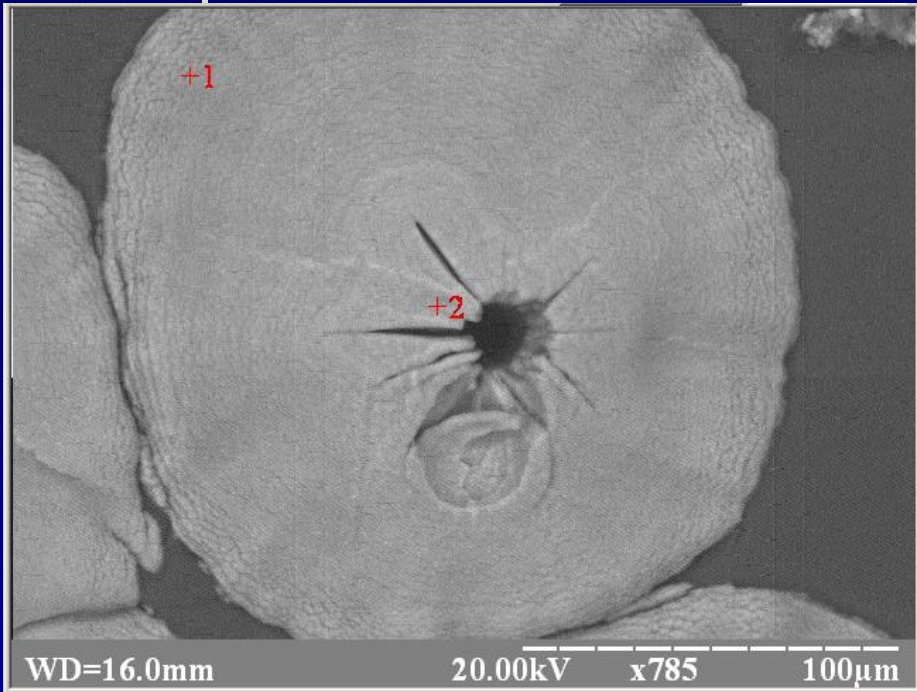
Type 1 - Tree growth rings pattern



- Separate medium and big size lesions, amount of which increase from periphery to the center of IOL
- In this case opacification starts after inappropriate YAG – capsulotomy (Dark dots – absence of IOL material)

Results

Type 1 - Tree growth rings pattern

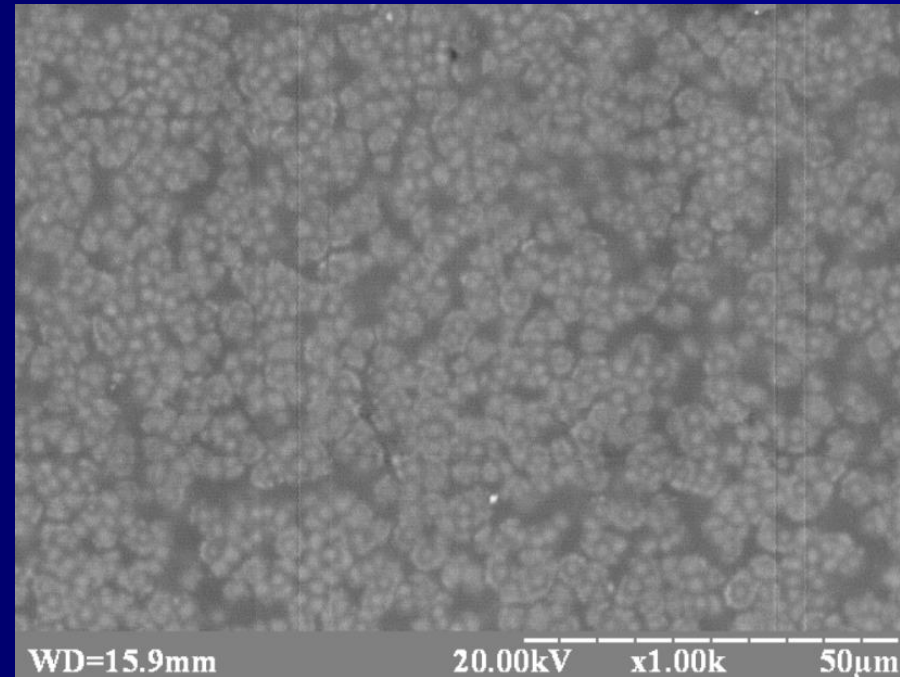
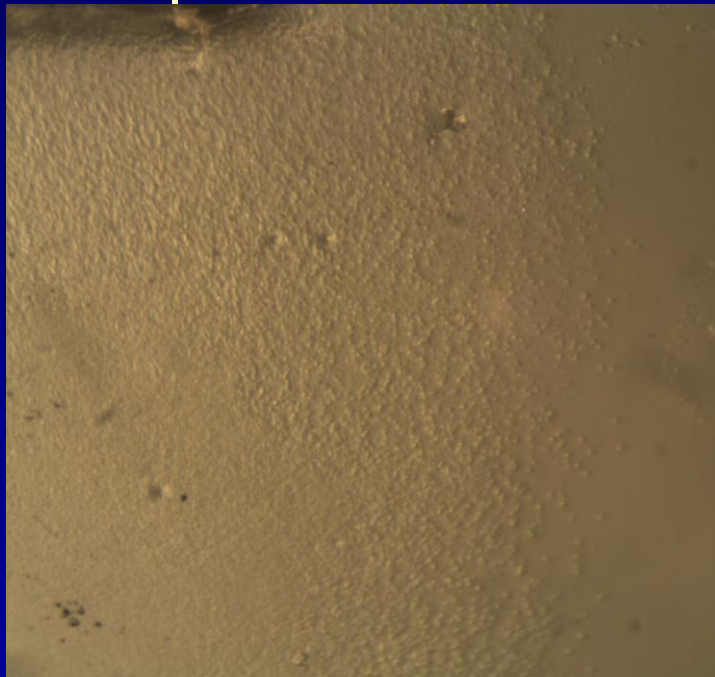


Элемент	Инг.	C %	Атом. %	Коеф.
P	K	457	21.17	25.811
S	K	3	0.23	0.267
Cl	K	6	0.04	0.045
K	K	10	0.00	0.000
Ca	K	1662	78.01	73.507
Ca	L	0	0.00	0.000
Fe	K	5	0.55	0.369
Fe	L	0	0.00	0.000

- Consists : Ca – 73.51% P - 25.81% Fe – 0.37%

Results

Type 2 - Night starry sky pattern

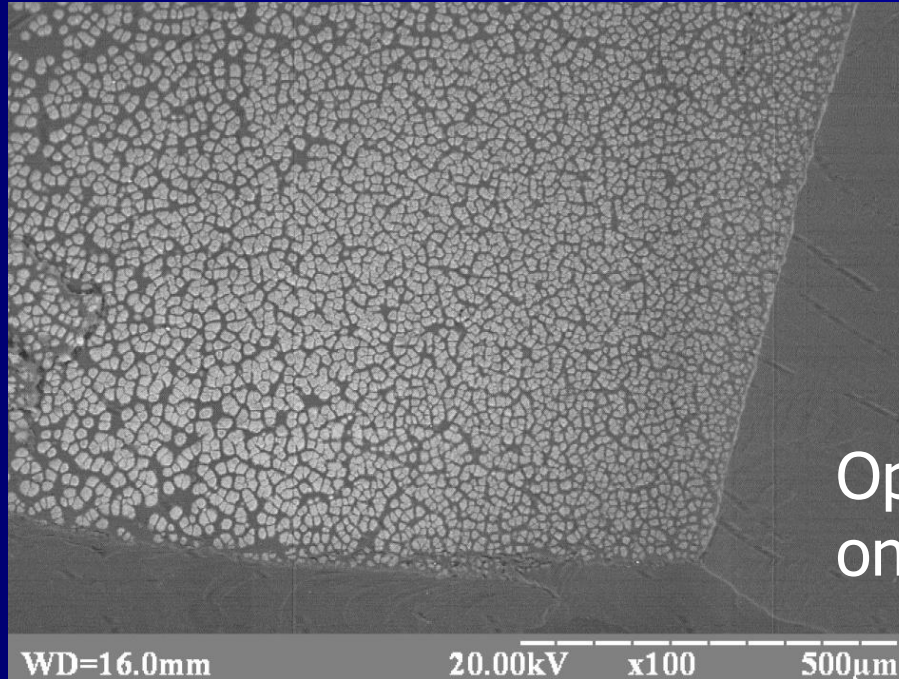
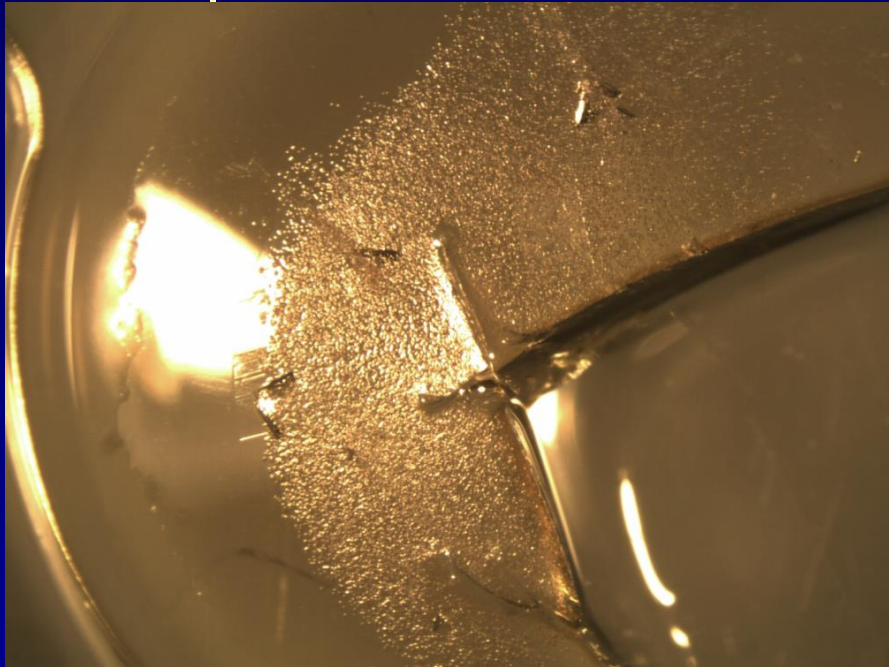


Элемент	Инт.	C %	Атом. %	Кэф.
P K	231	20.21	24.706	24.706
S K	6	0.85	0.999	0.999
Cl K	4	0.05	0.057	0.057
K K	1	0.00	0.000	0.000
Ca K	878	77.85	73.538	73.538
Ca L	0	0.00	0.000	0.000
Fe K	5	1.03	0.700	0.700
Fe L	0	0.00	0.000	0.000

- Separate small size round lesions, that aggregate in big opacification zone
- Consists : Ca – 73.54% P - 24.71% Fe – 0.7%

Results

Type 3 - Mosaic pattern

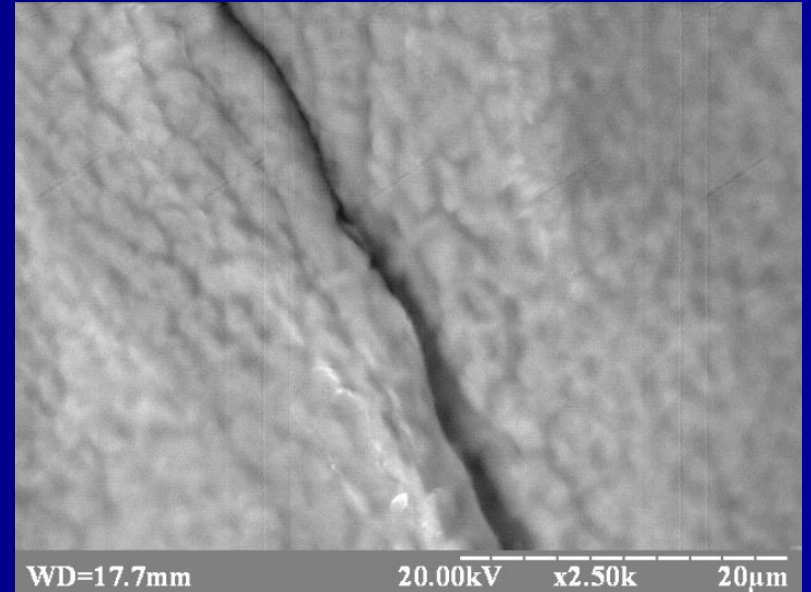
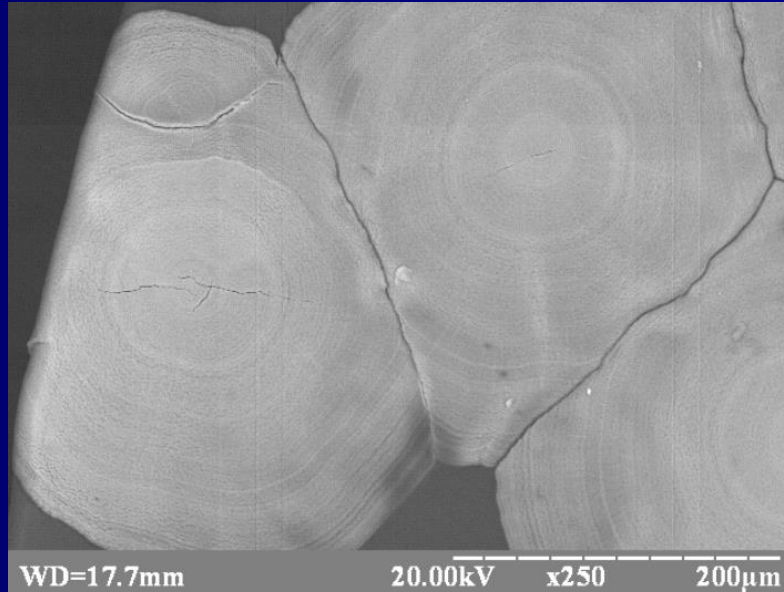
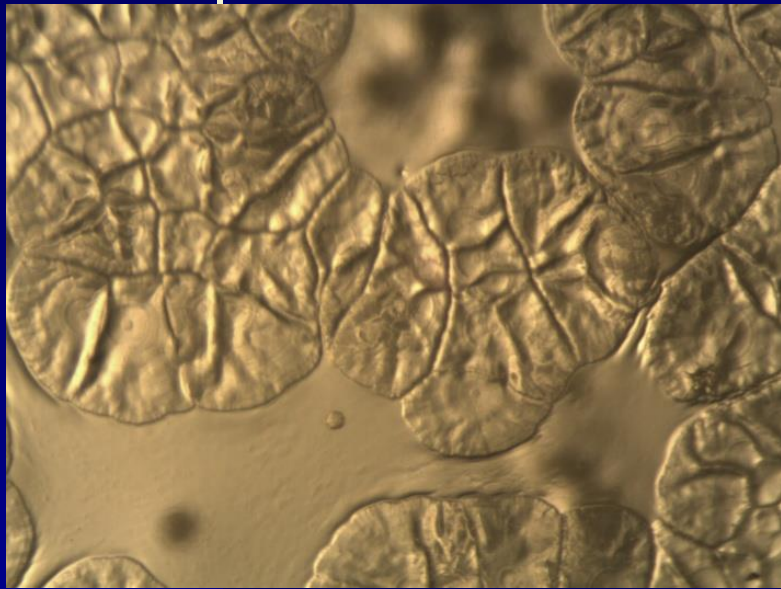


Opacification is ALWAYS only on the surface of IOL

- Separate small size square lesions, that aggregate in big opacification zone
- Consists : Ca – 77,51% P - 22.49% Fe – 0.7%

Results

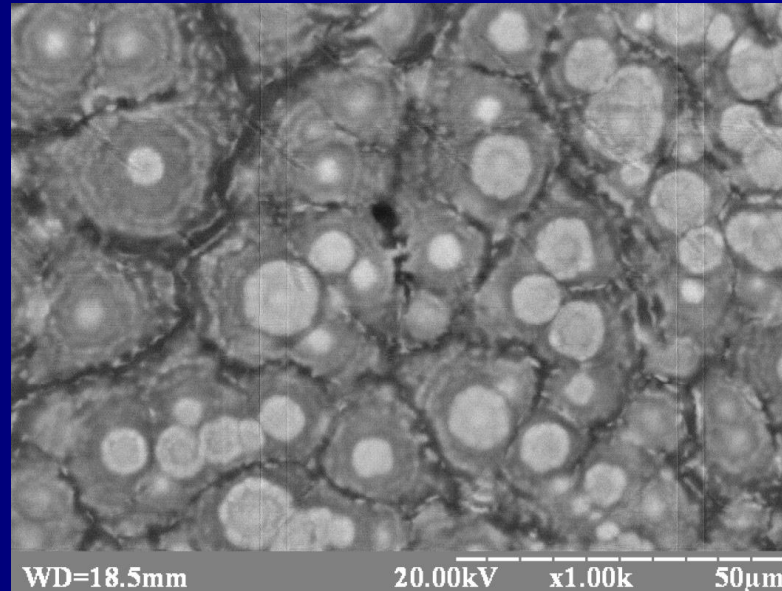
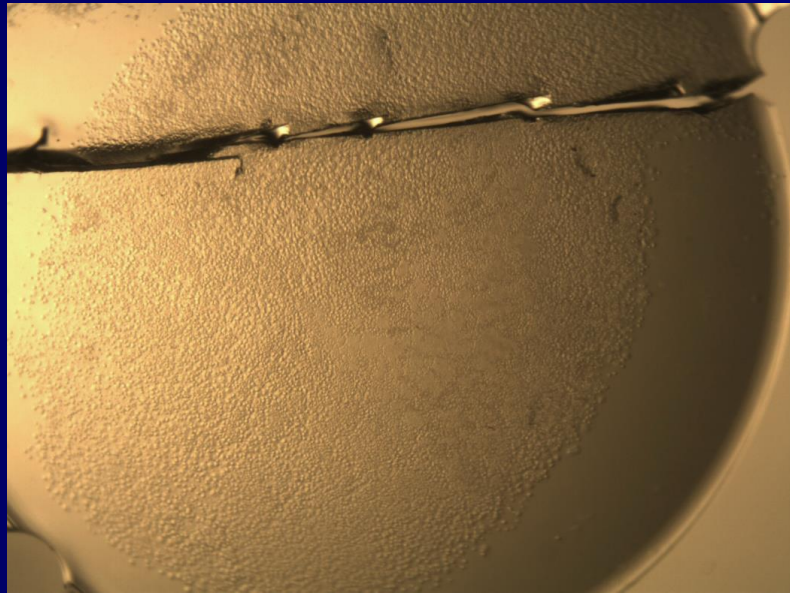
Type 4 - Frozen lava pattern



- One big zone of opacification that consist from tightly packed "cells" with clear demarcation on high magnification images
- Consists : Ca – 70,47% P - 28.61% Fe – 0.9%

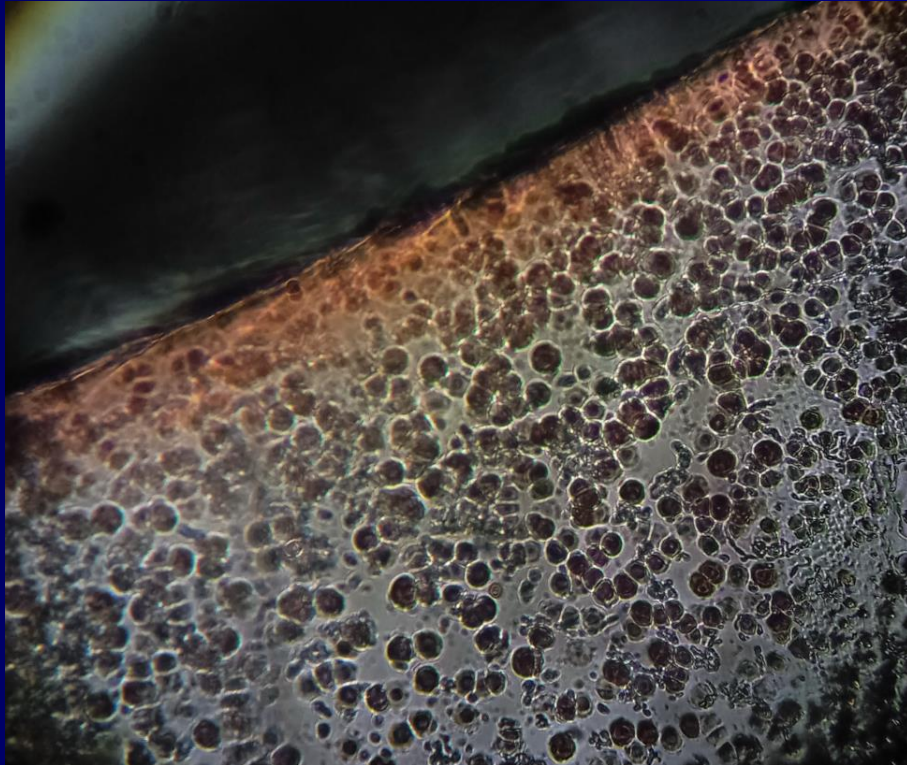
Results

Type 5 - Fish caviar pattern



- One big zone of opacification, that totally covered IOL surface in the center and with some free clear space on periphery
- Most "cells" have bright white center
- Consists : Ca – 77,83% P - 22.17% Fe – 0.8%

Alazarin Red staining



Alizarin red staining approved the presence of calcium in all cases of opacification

Conclusion

The main reason of hydrophilic intraocular lens opacification is deposition of calcium and phosphorus (in 3 to 1 ratio) in affected zone that's why we need:

- To find the way of prevention this deposition
- To develop in vivo method of dissolving of calcium in already opacified IOL