La cathodoluminescence au MEB comme méthode d'identification des diamants naturels et synthétiques

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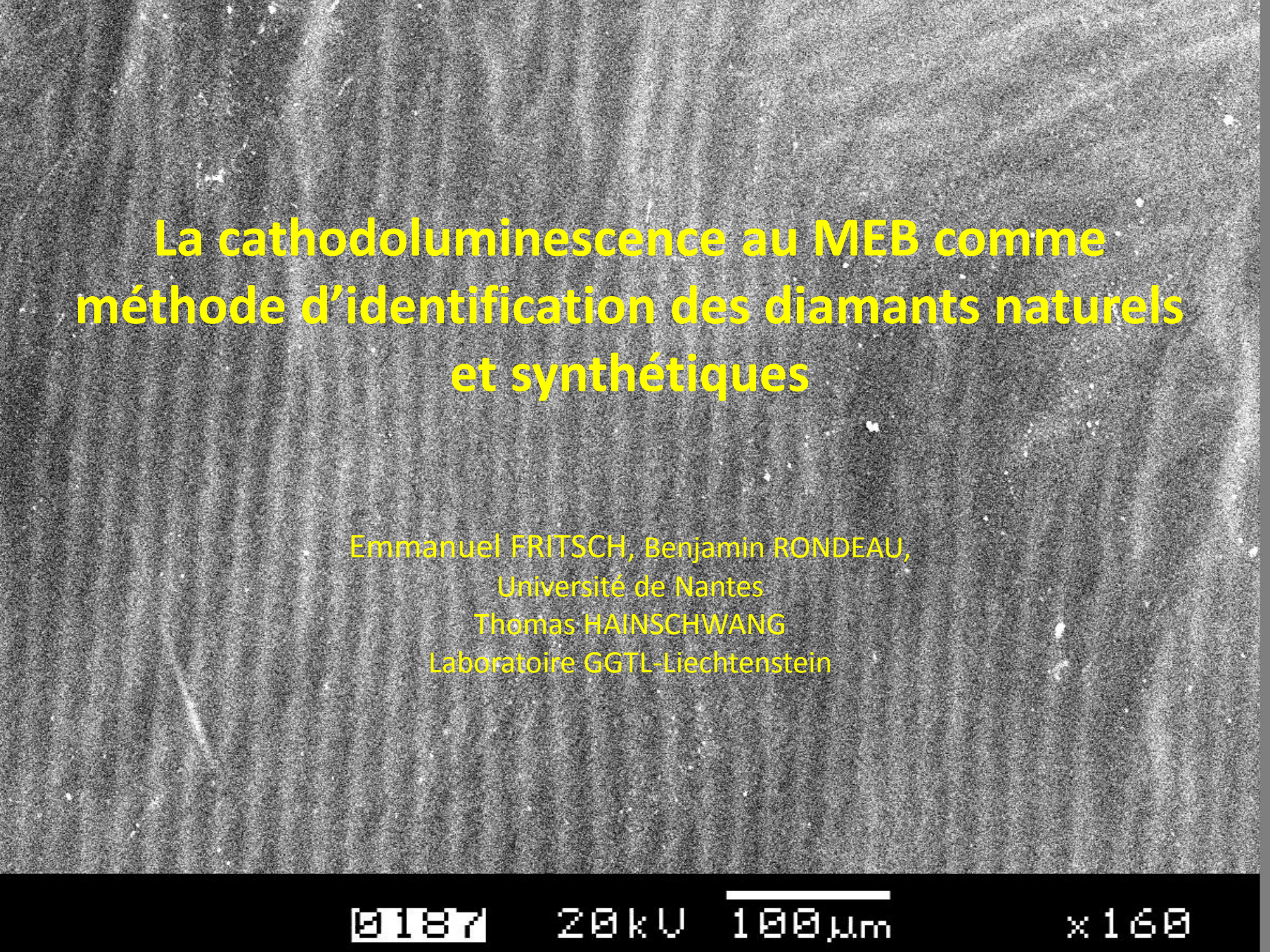
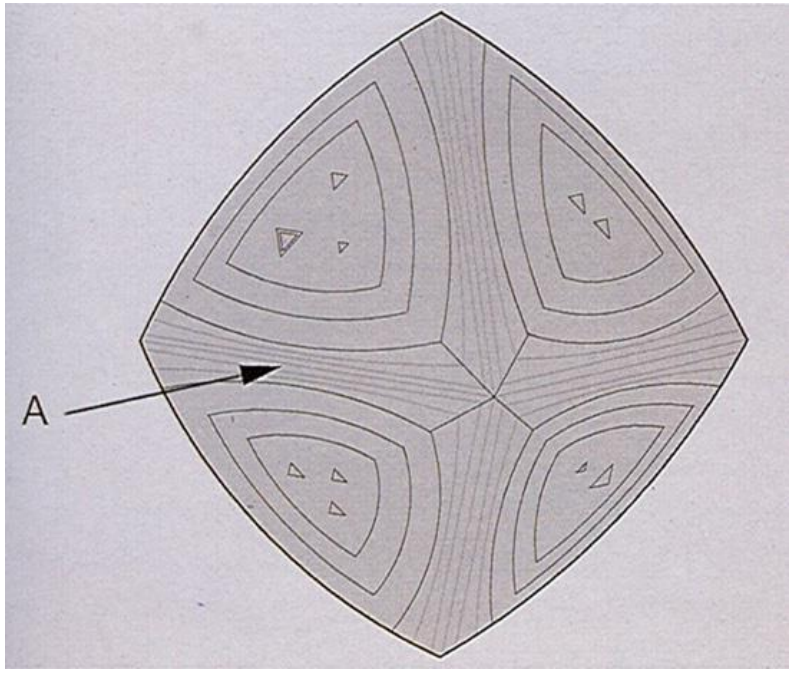
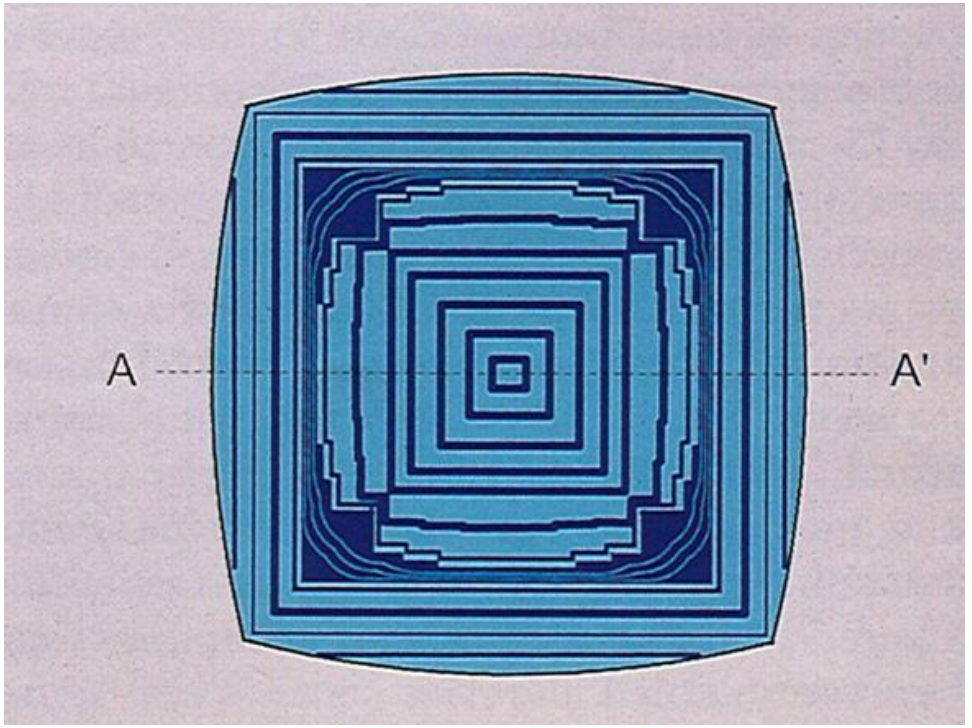


Naturel ou synthétique?

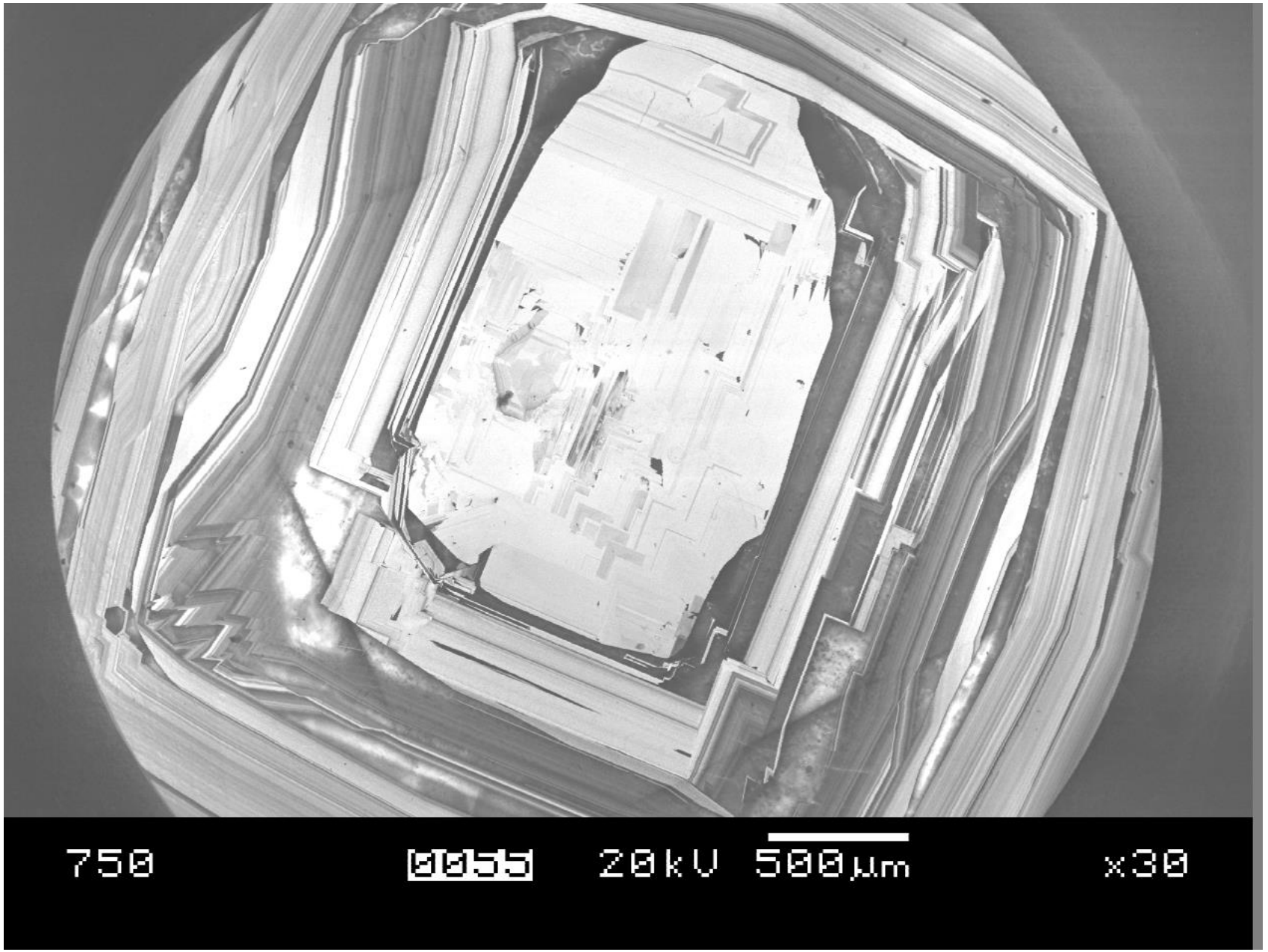
La différence ne se voit pas à l'œil nu.

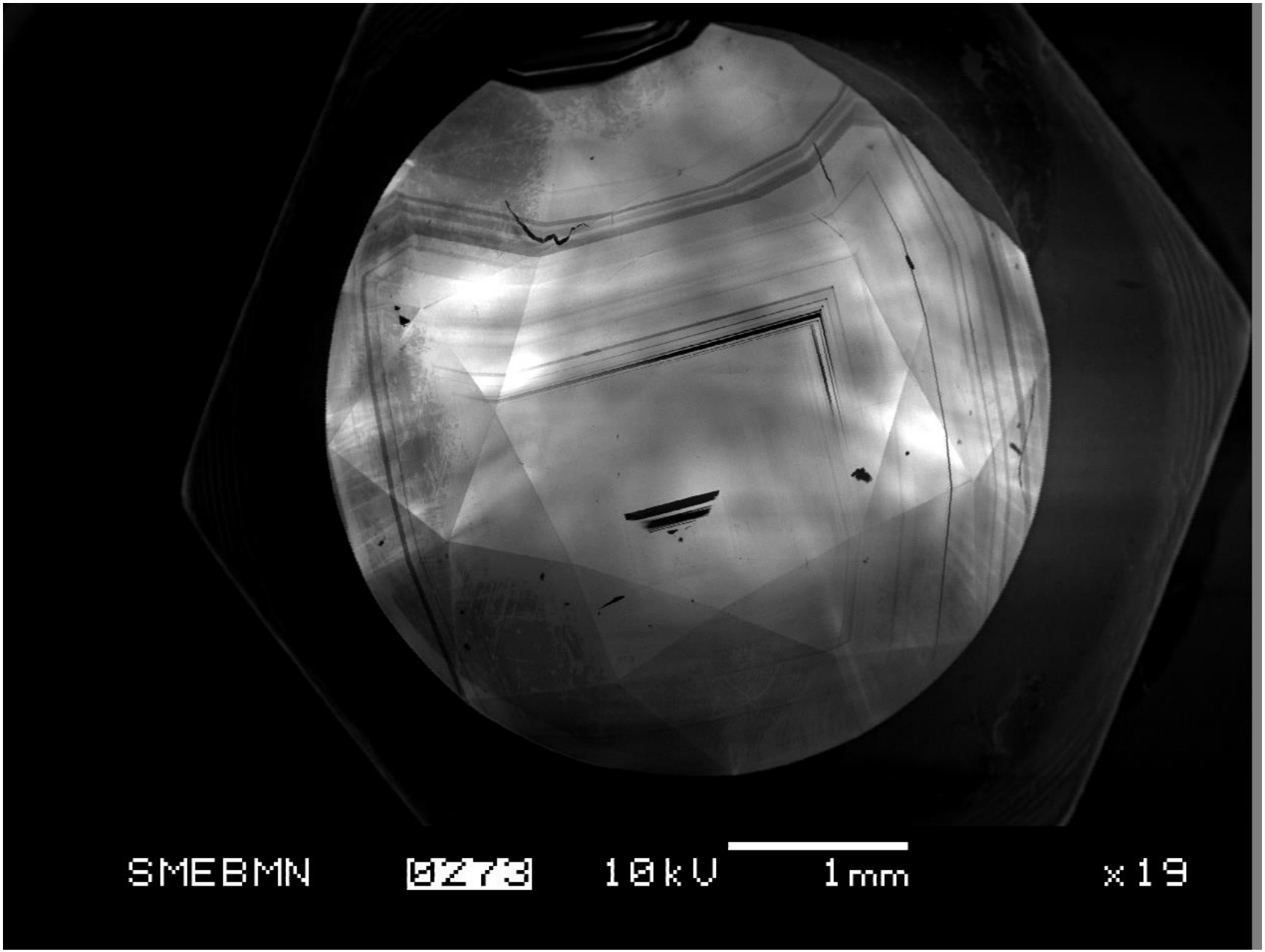


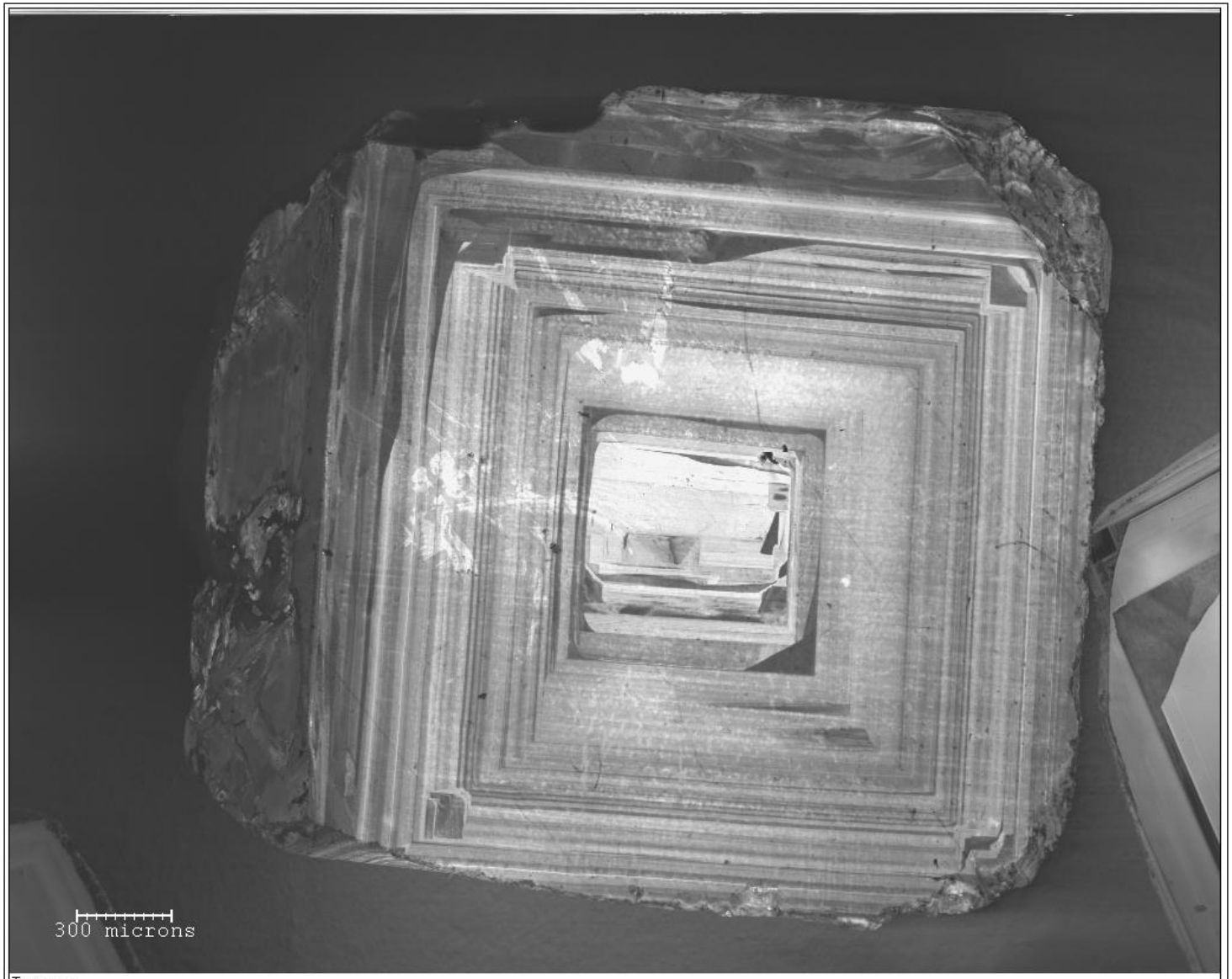


Diamant naturel
Octaèdrique
(+cuboide)
dissous

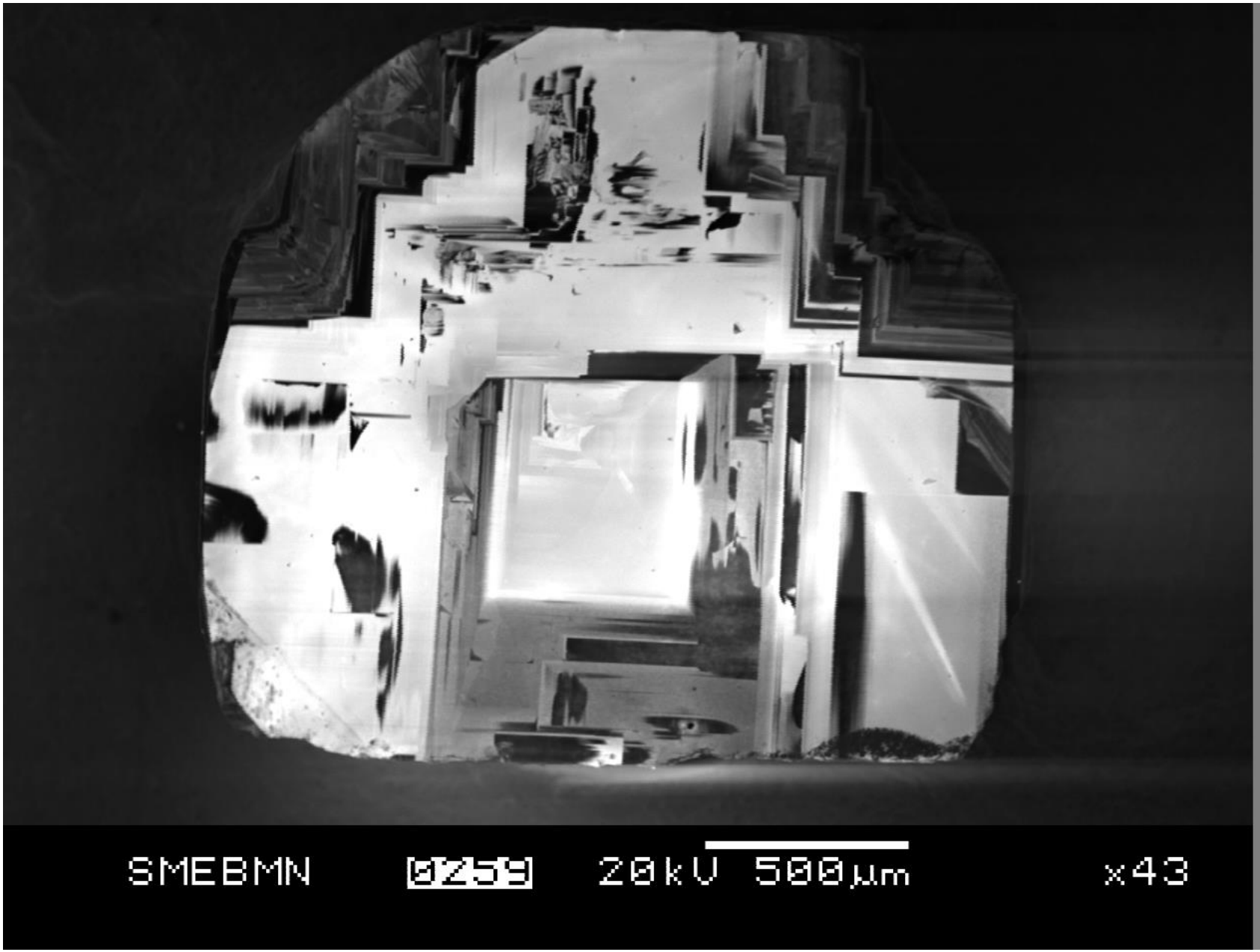
DB verification instruments G&G Fl 96

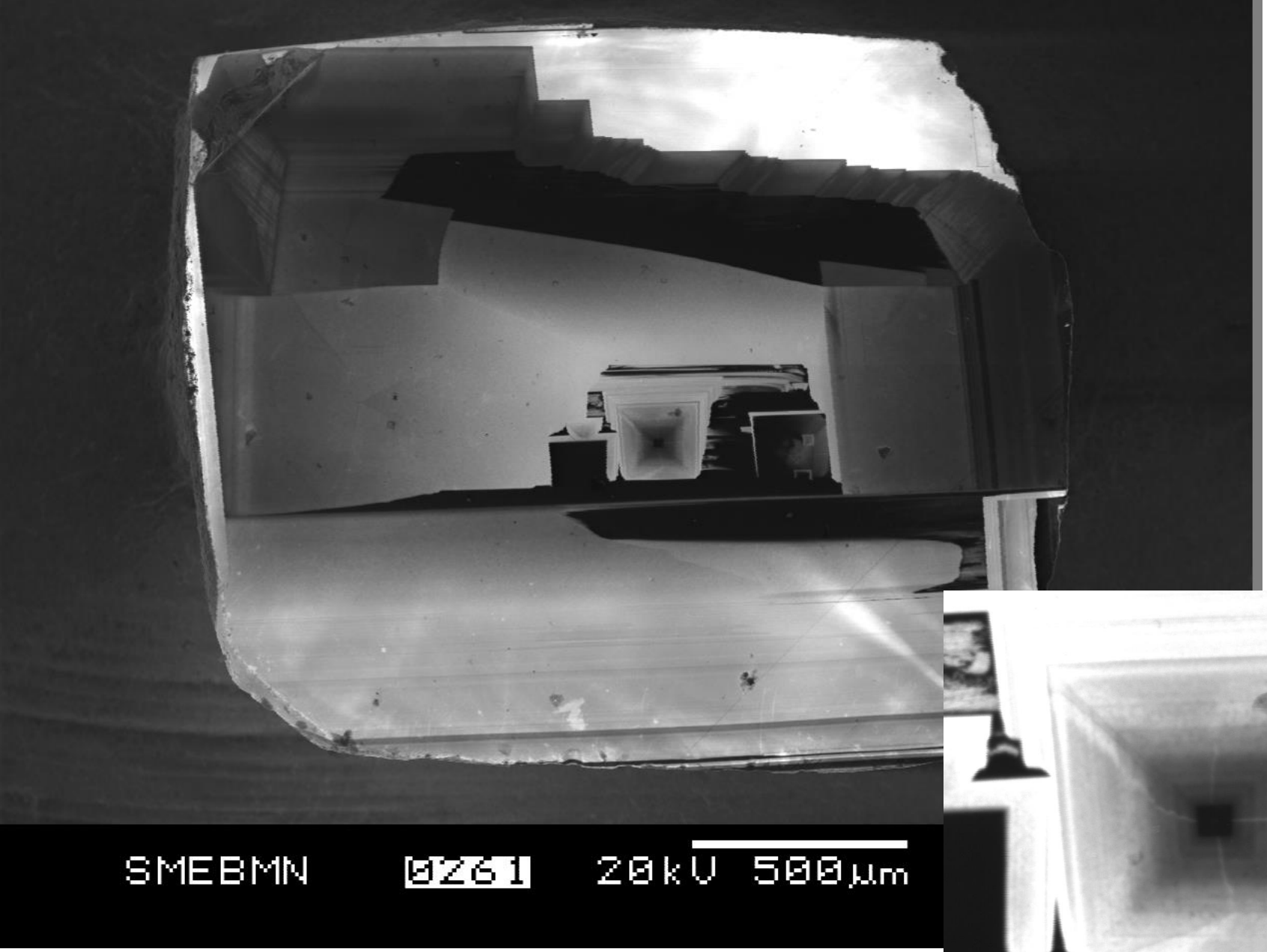

750
0055
20kV
500µm
x30

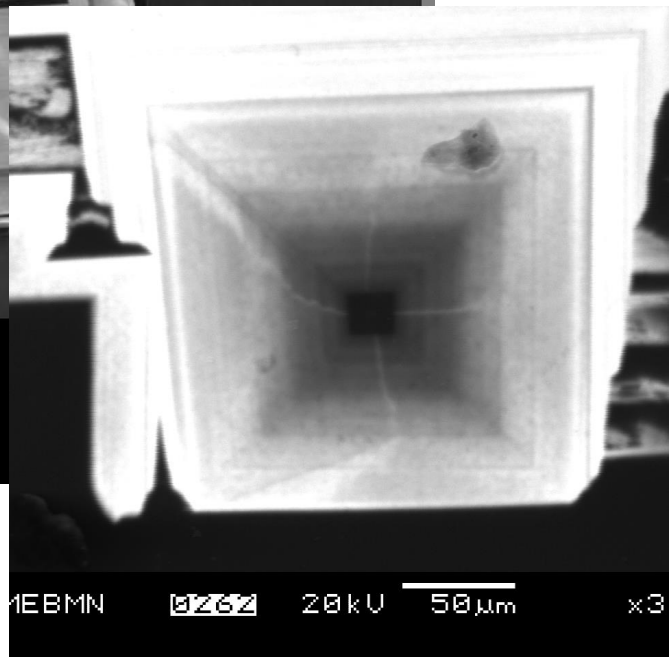

SMEBMN
0273
10kV
1mm
x19

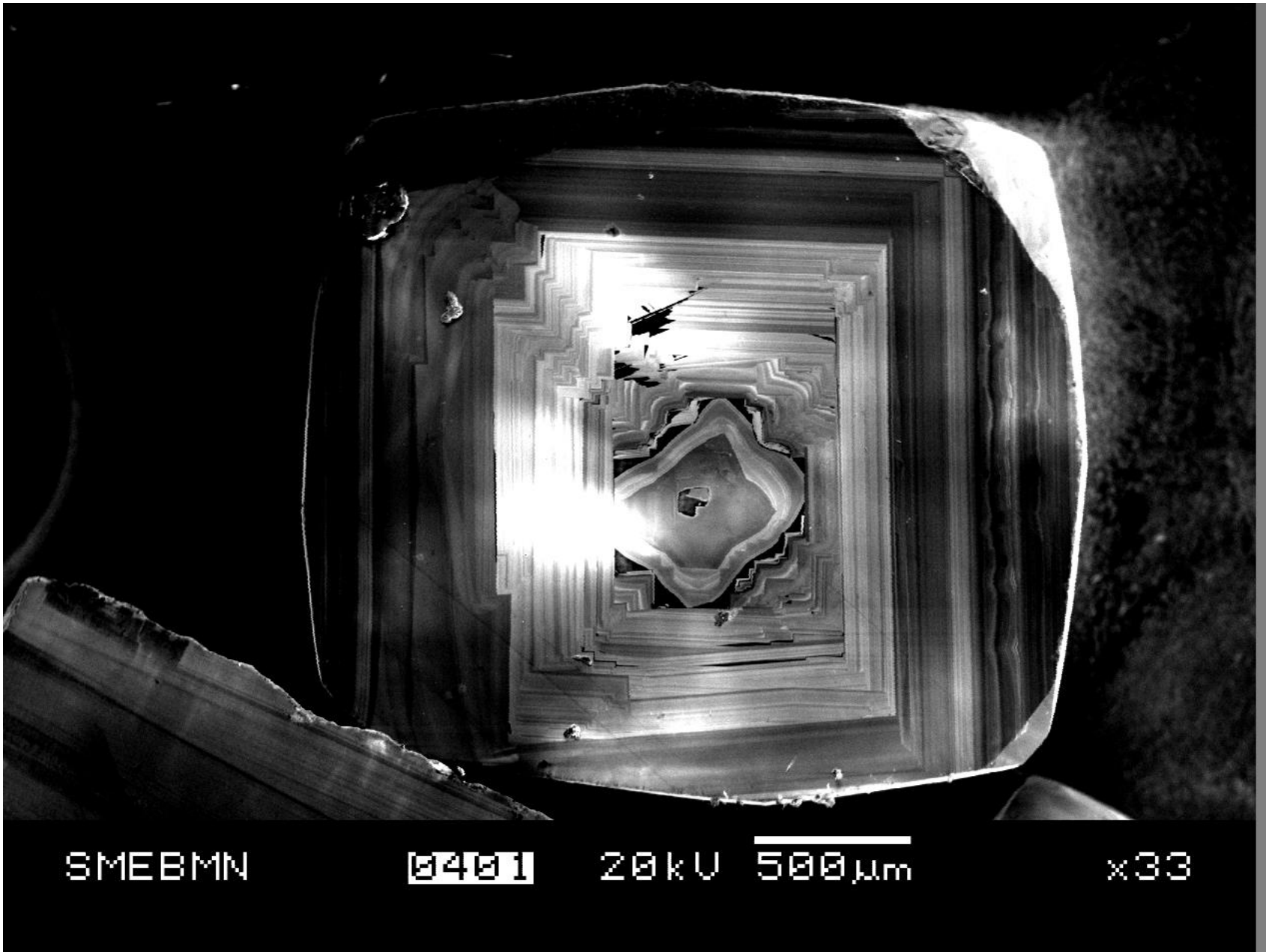


Image


SMEBMN
0259
20kV
500µm
x43


SMEBMN 0261 20kV 500µm

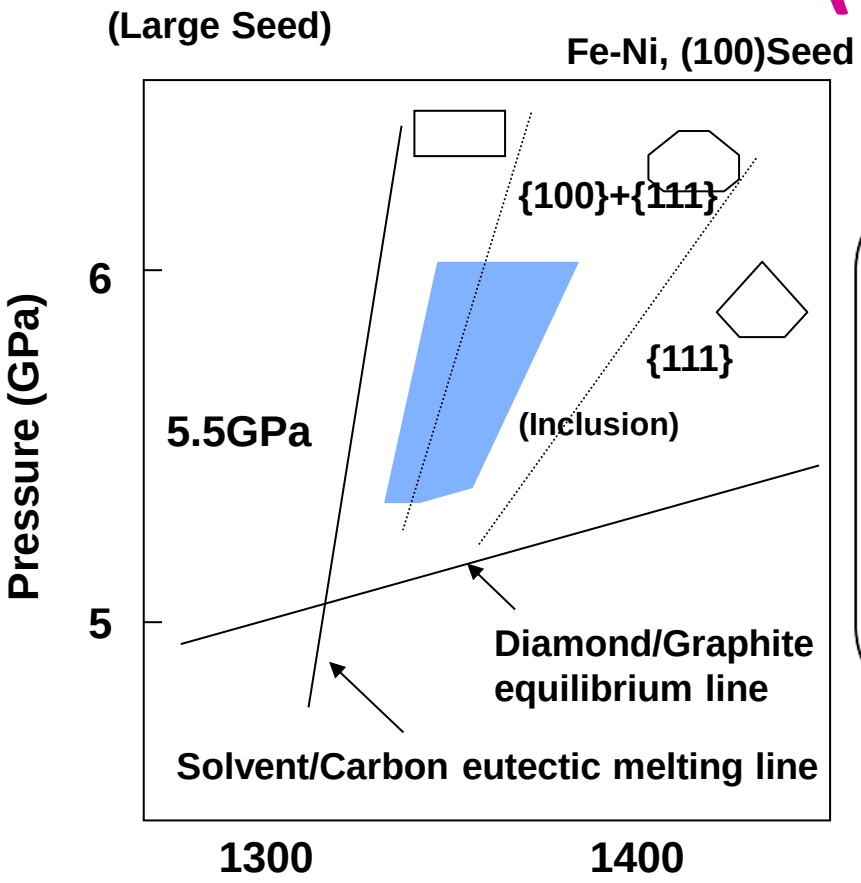

MEBMN 0262 20kV 50µm x3

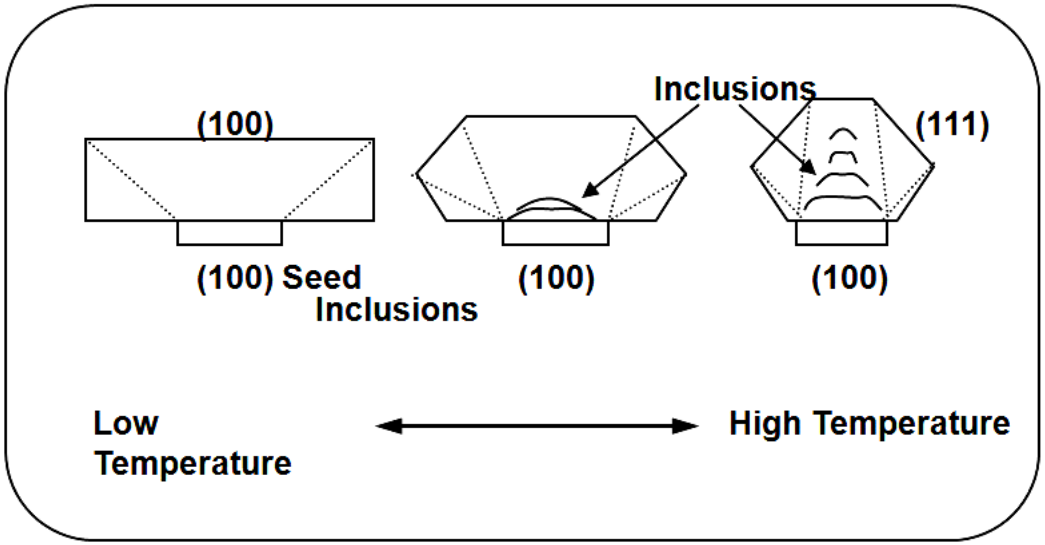

SMEBMN
0401
20kV
500µm
x33

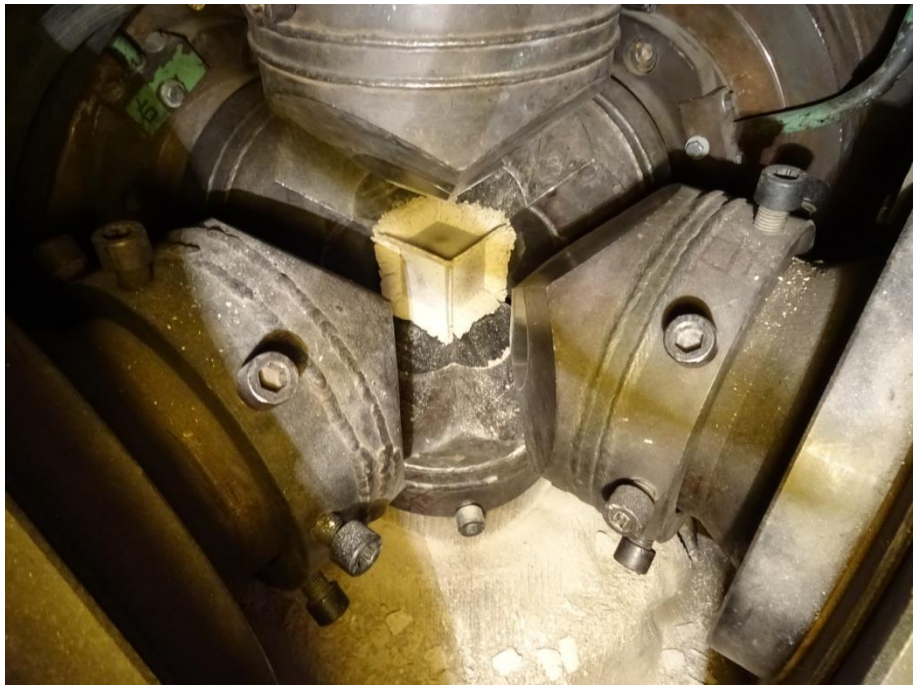

SMEBMN
0256
20kV
200µm
x75

204
12kV
200µm
x70

Synthétique: Croissance en solvant (métal fondu) à Haute Pression et Haute Température (HPHT)

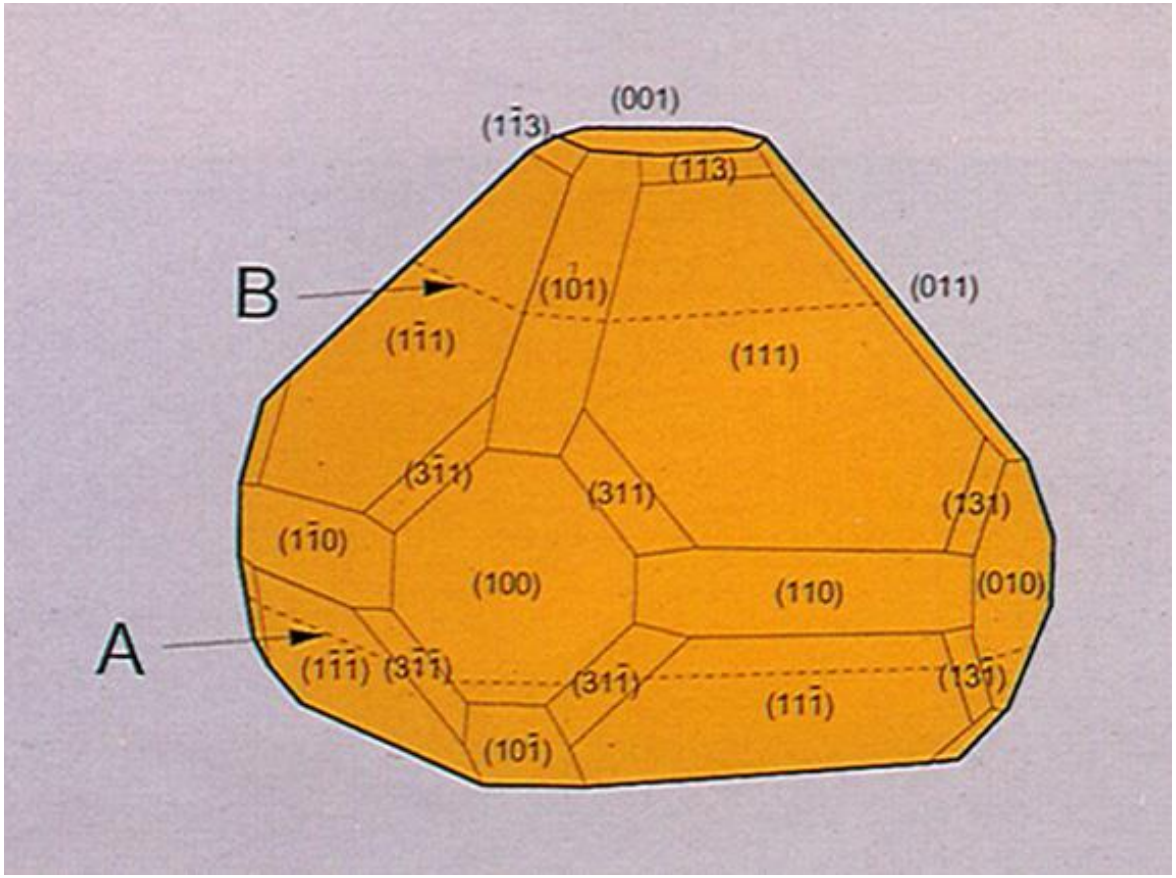




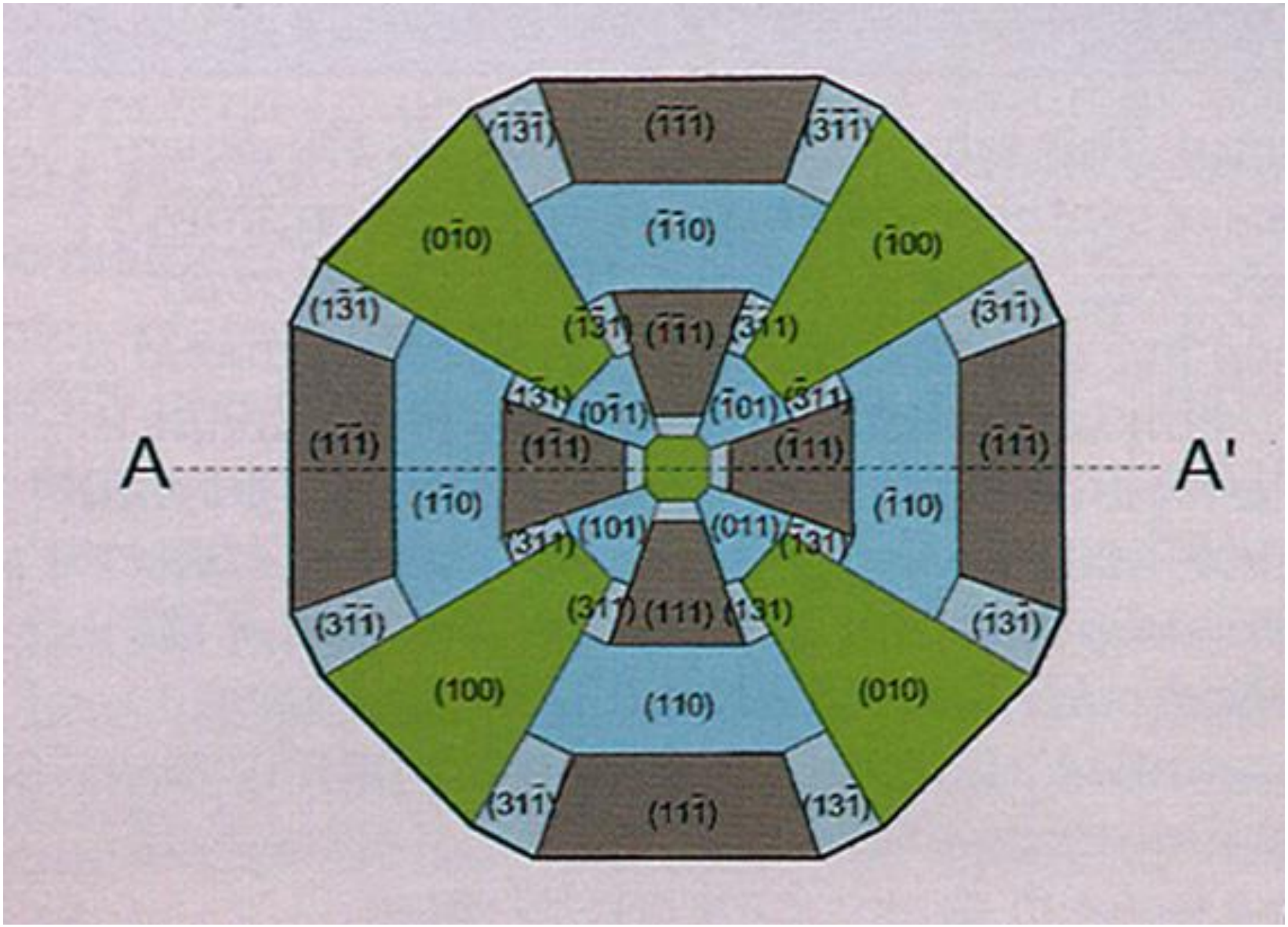


Méthode HPHT
Zhenghzou, Chine

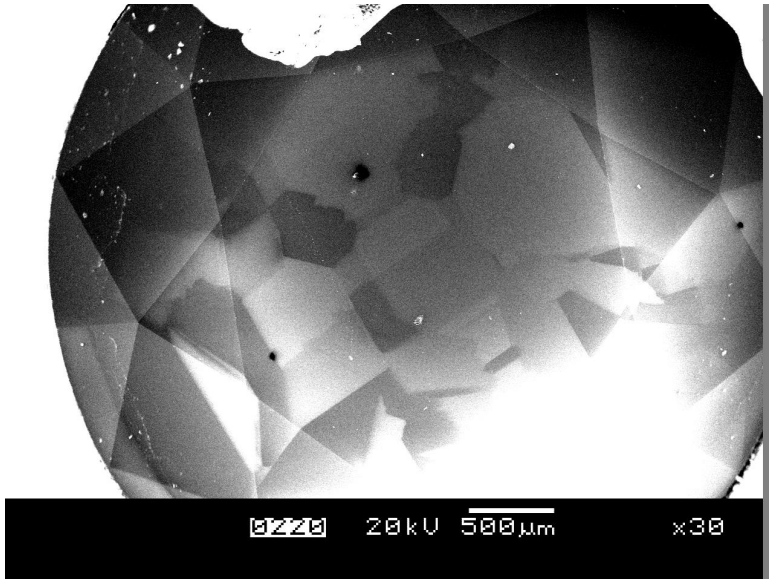
50 kBar, 1350°C

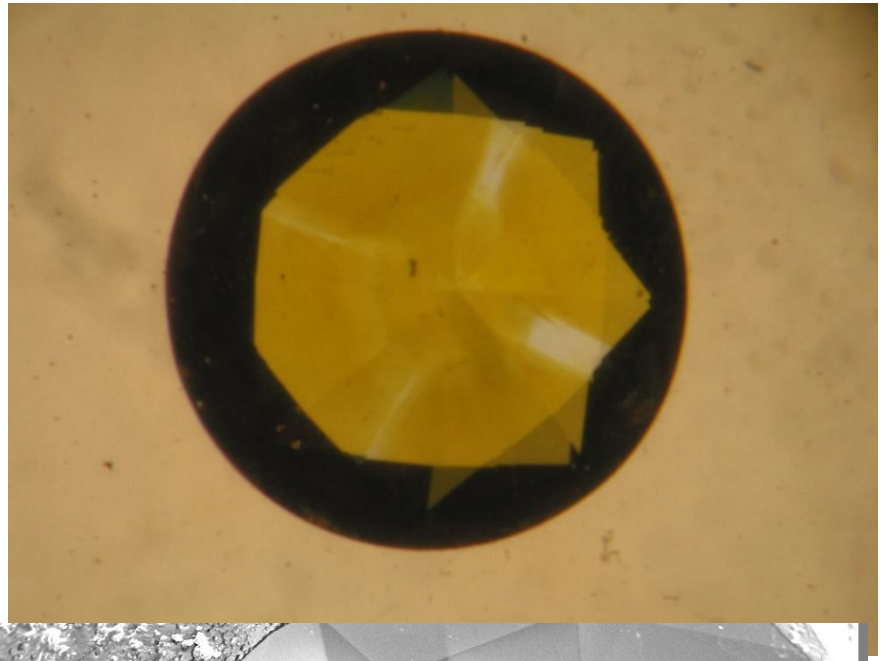


DB verification instruments G&G Fl 96

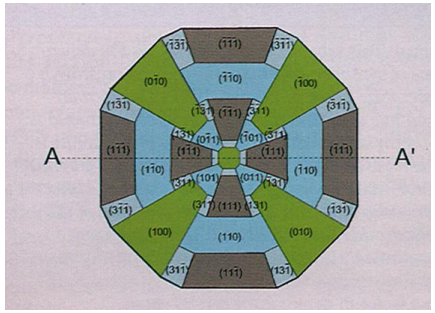


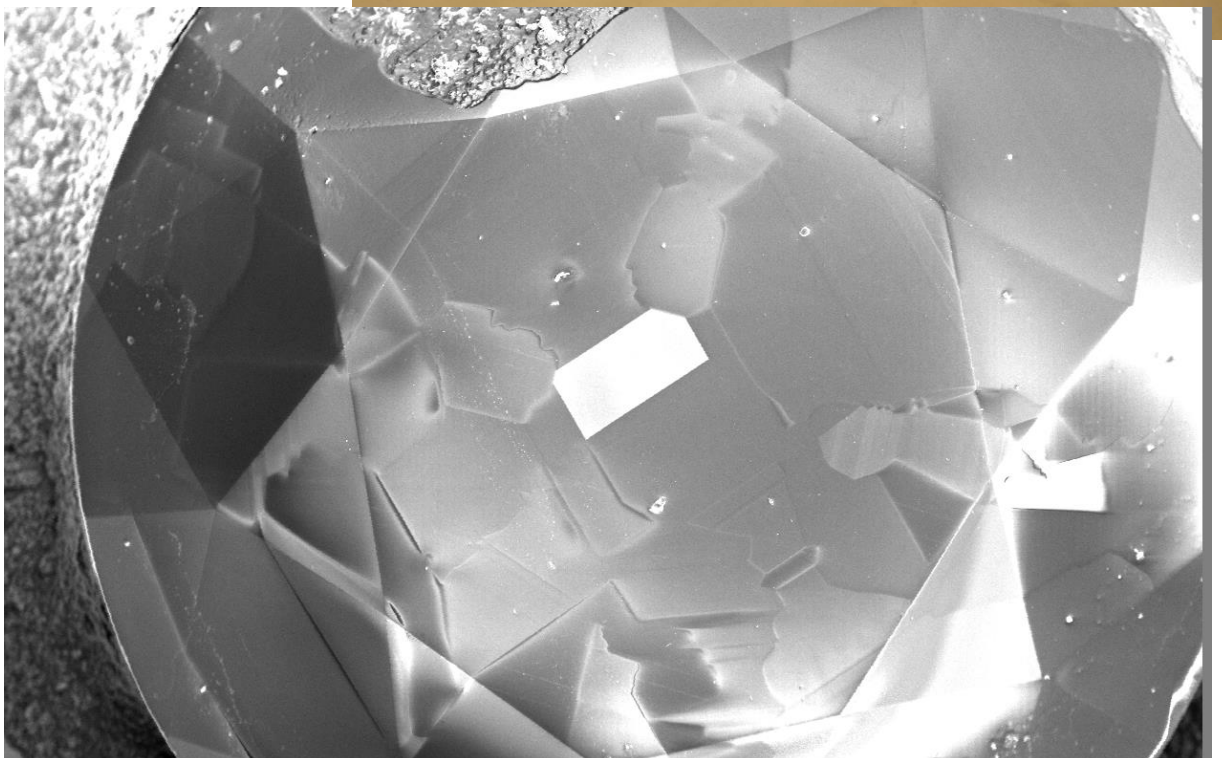
DB verification instruments G&G Fl 96

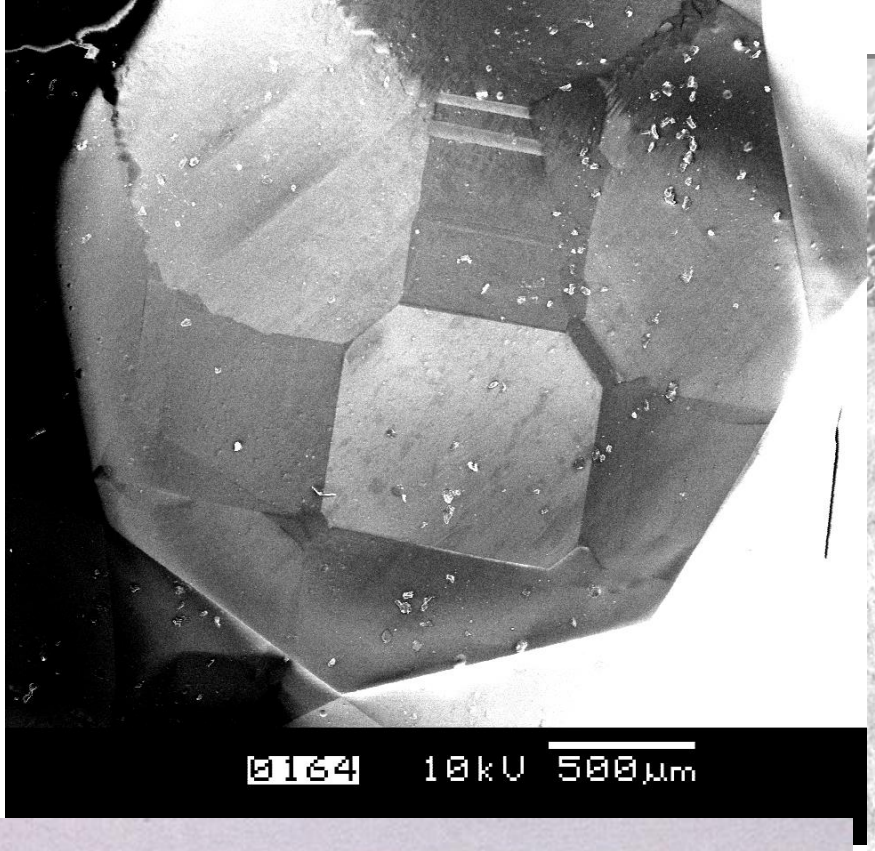


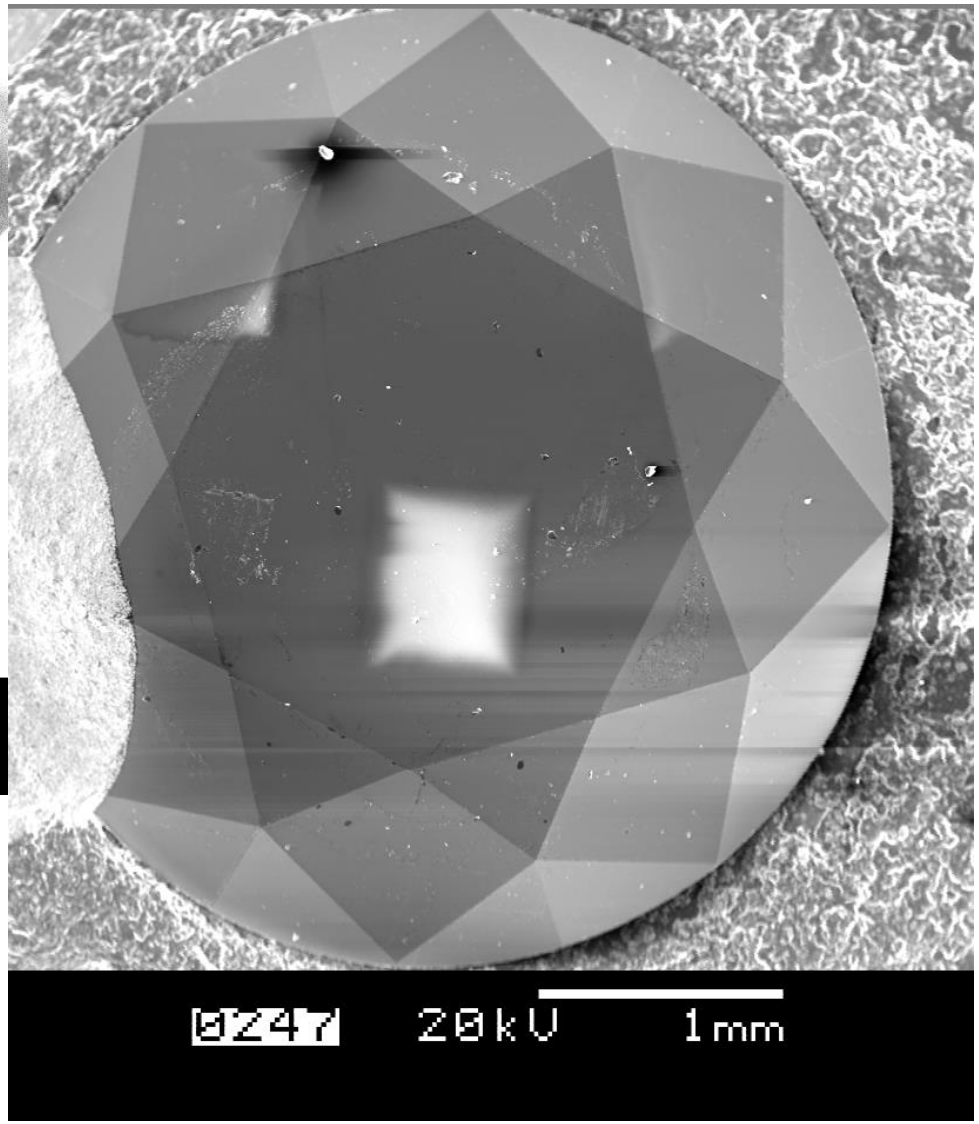


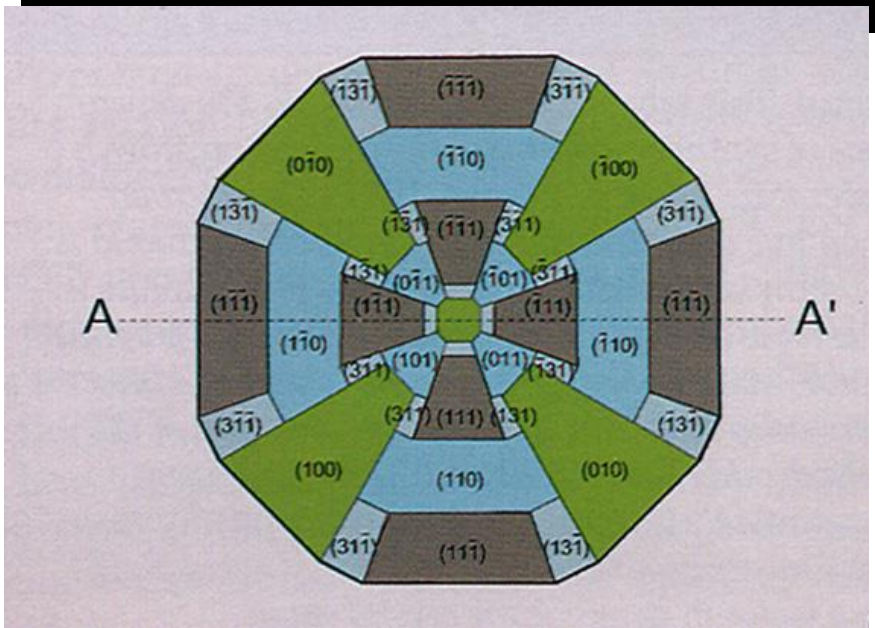
BSE



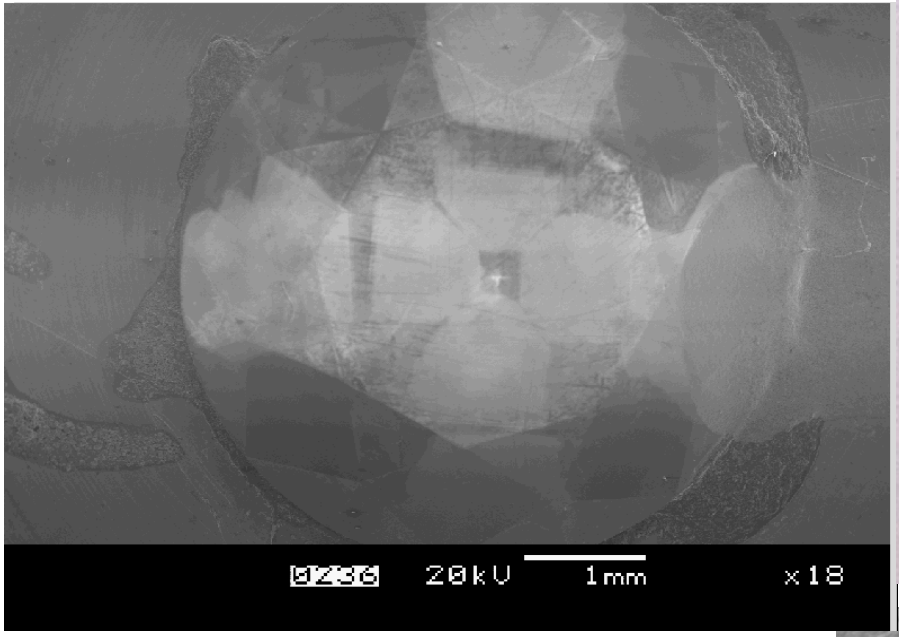


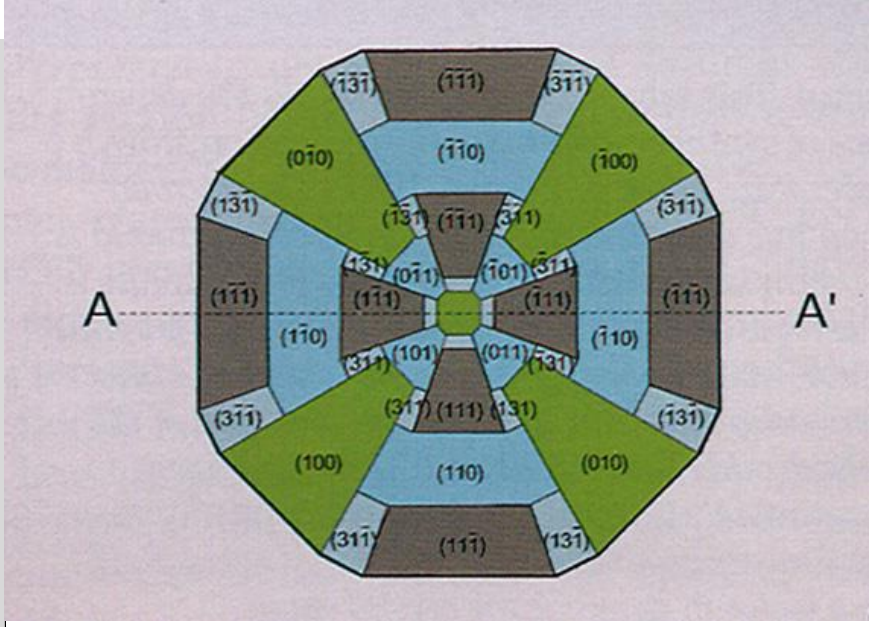




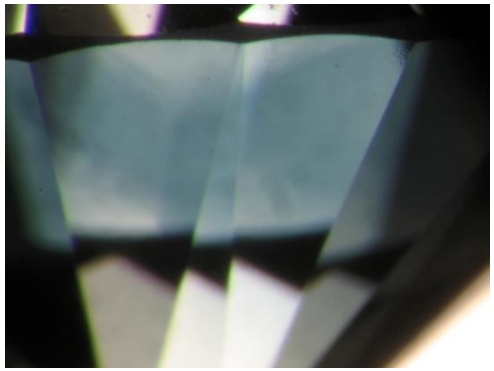


Synthétiques Ib Jaune brun

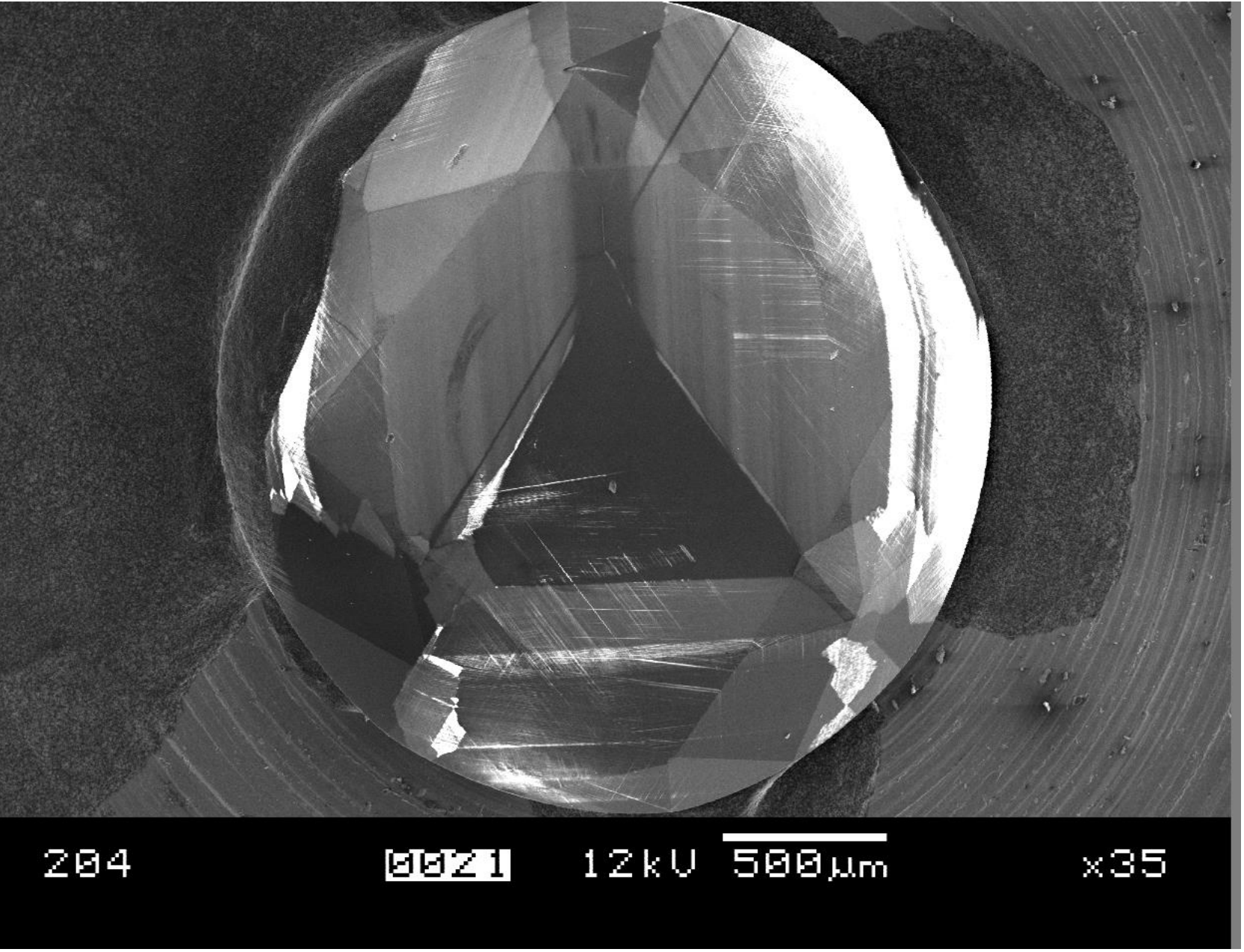




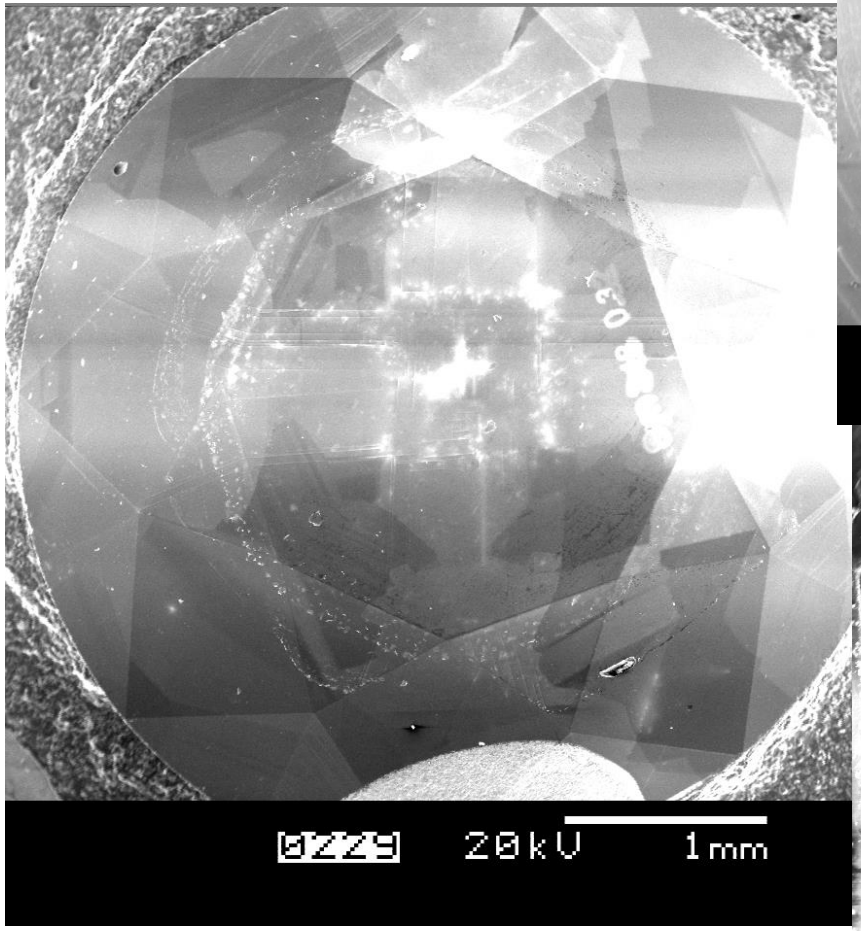
Synthétiques IIb
bleus

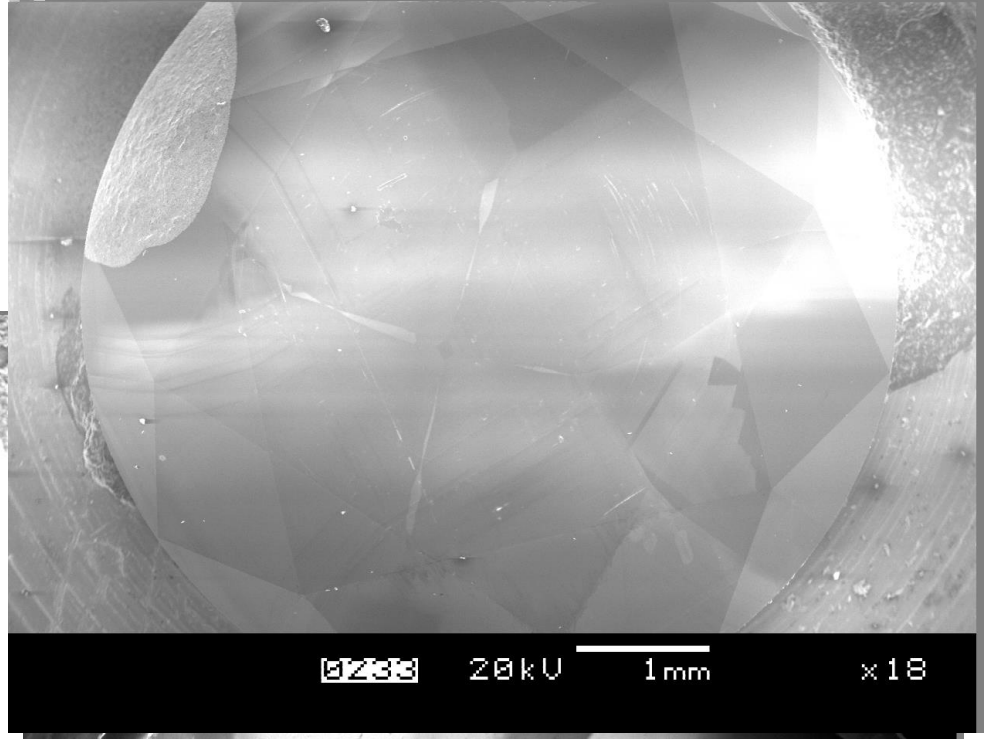


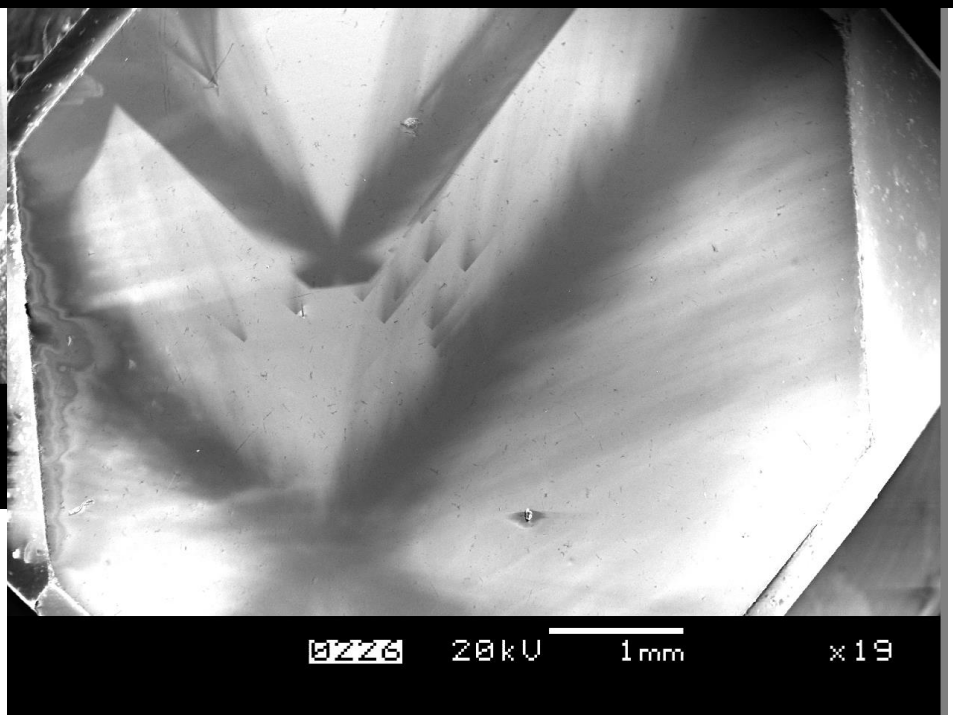
0.45 ct bleu HPHT



Synthétique au Co

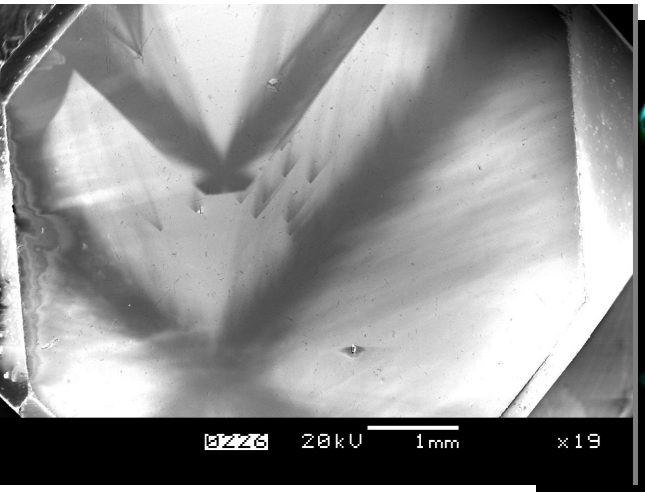


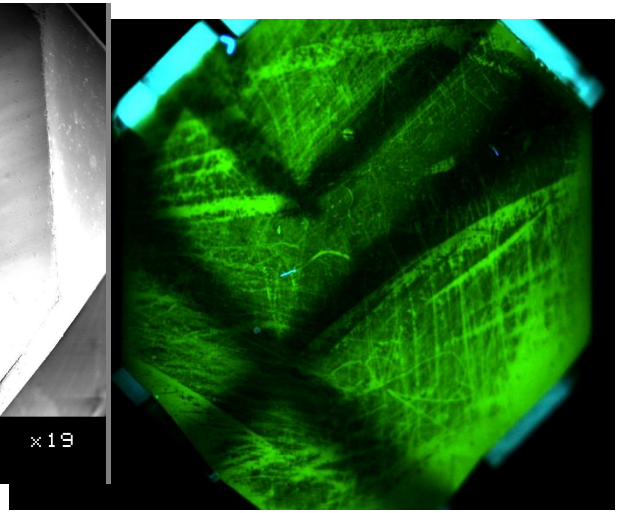


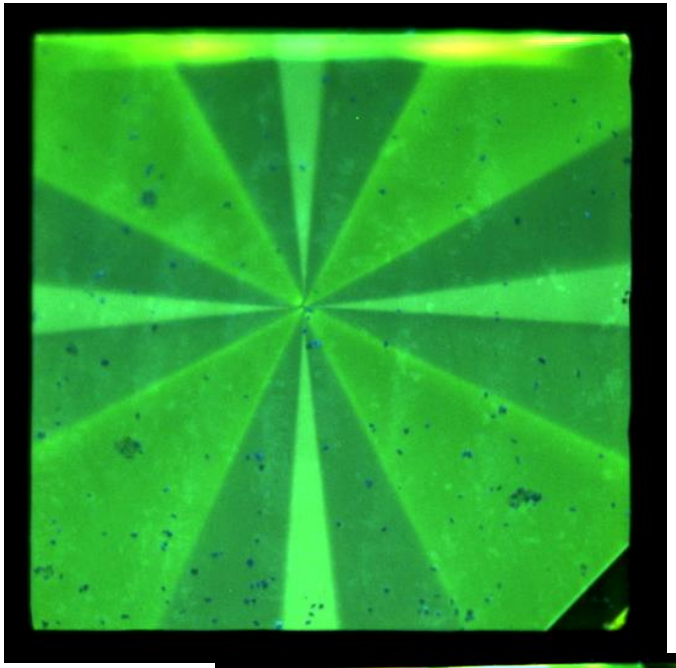


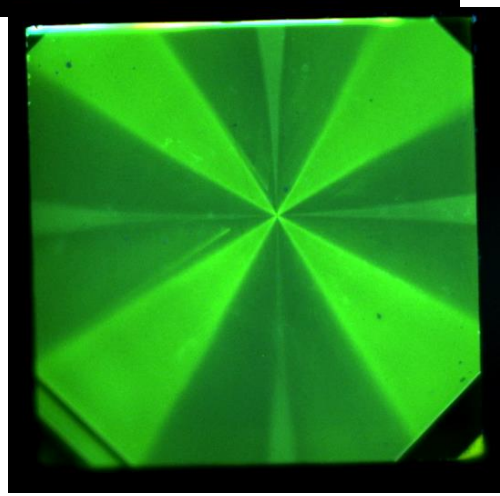
Synth IIa
incolores

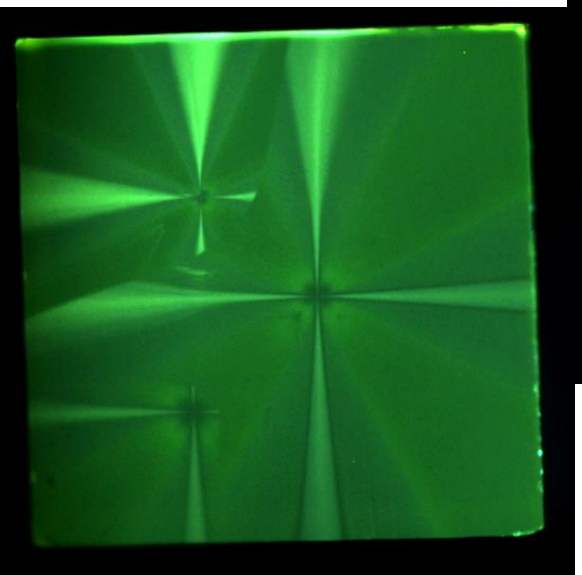
Maltese-Cross effect

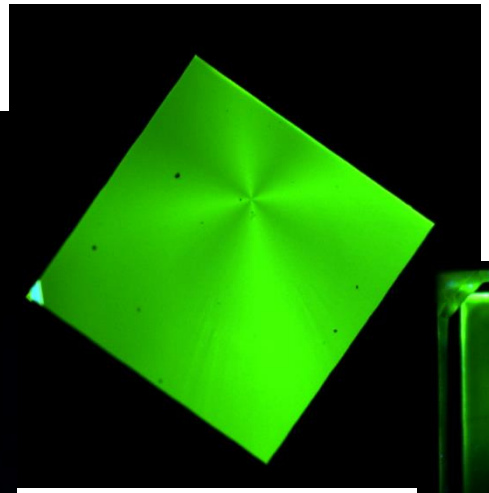


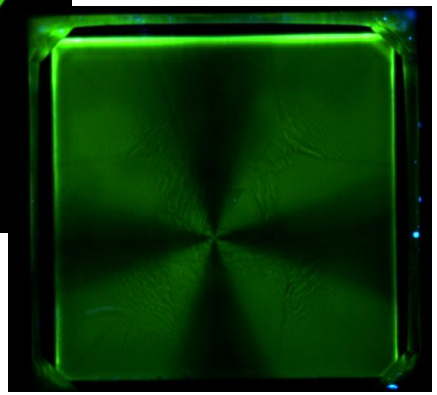




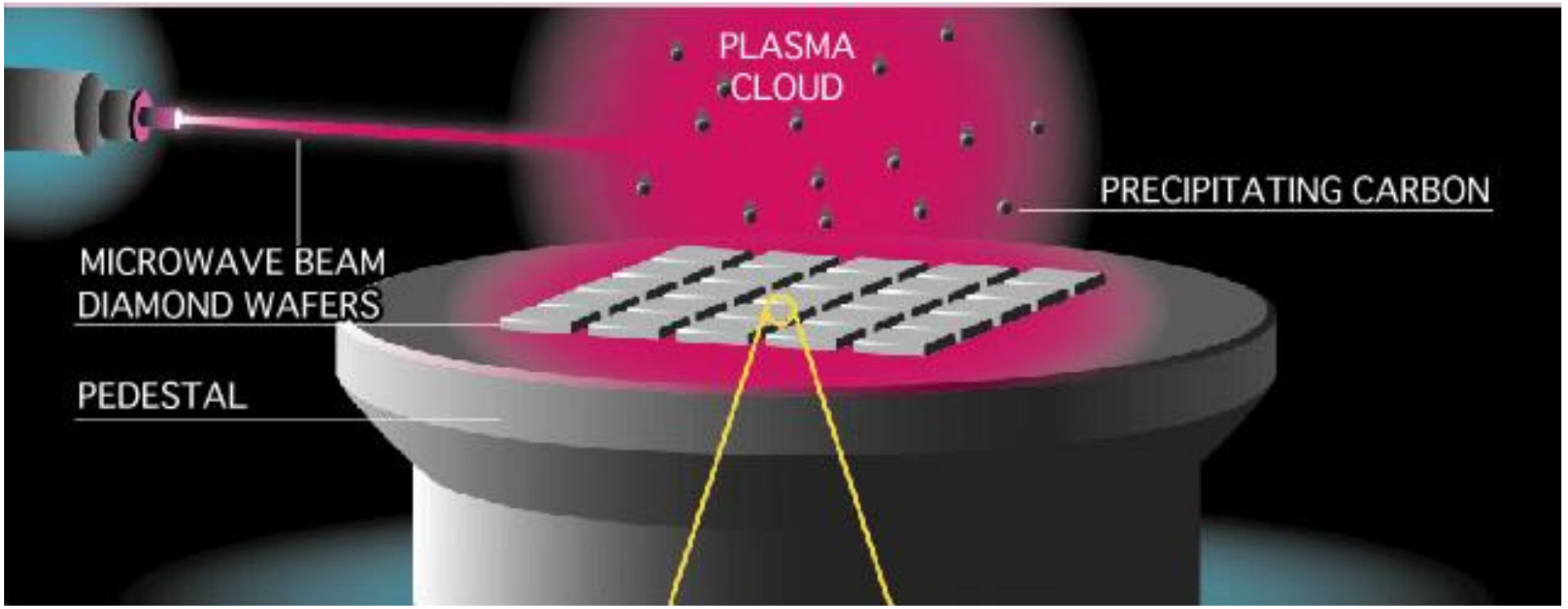




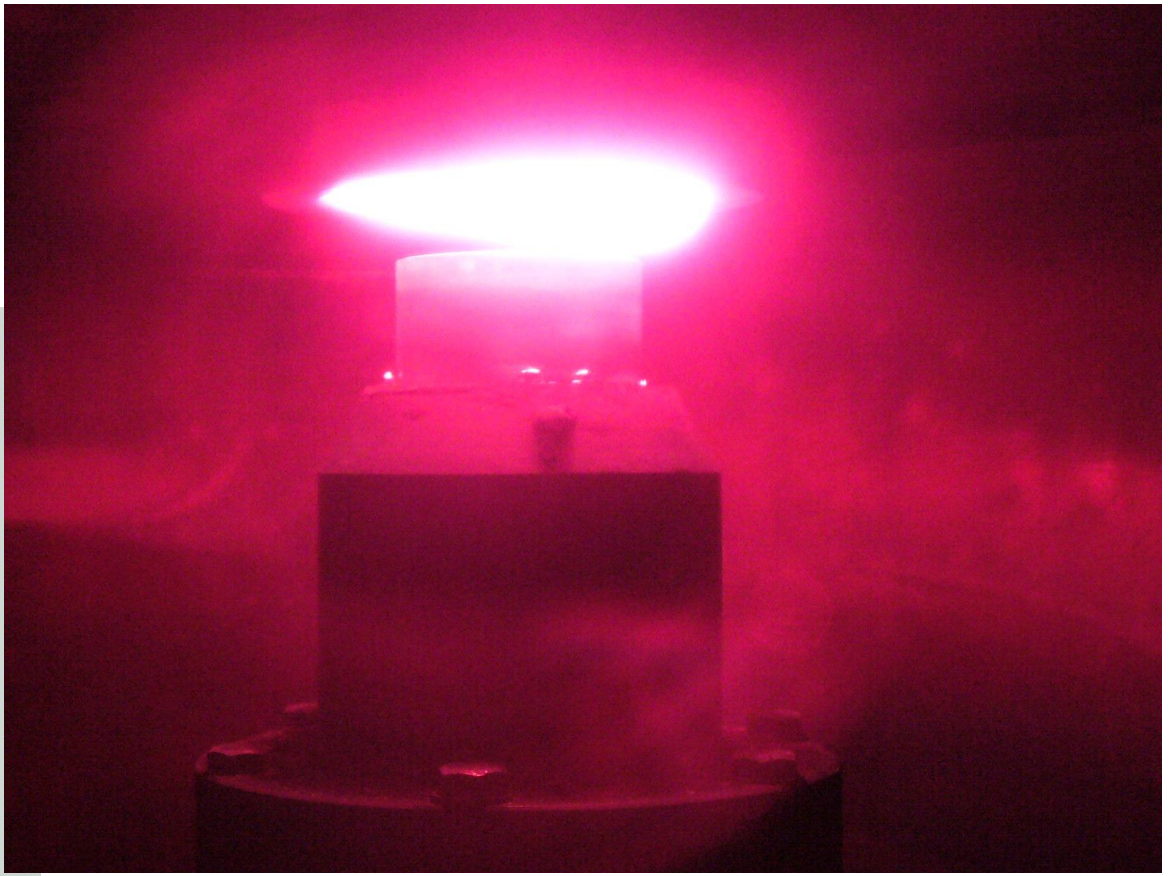


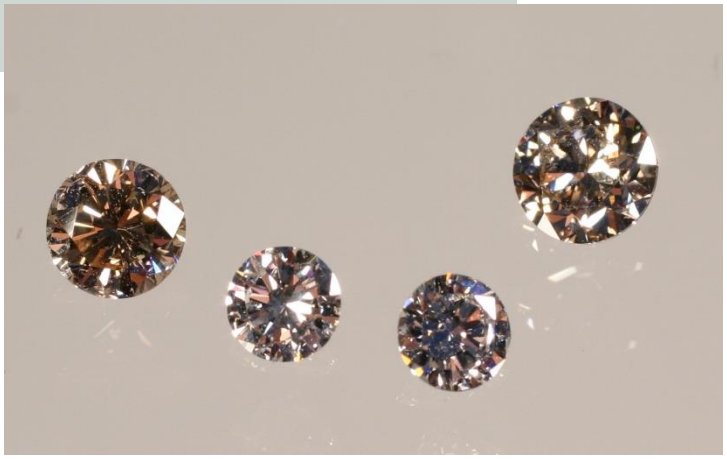


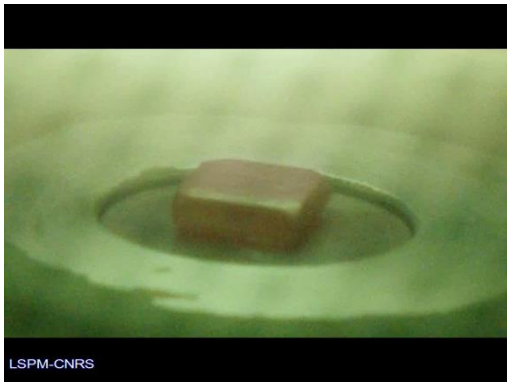
Synthétique: croissance en phase vapeur Chemical Vapor Deposition (CVD)



Croissance hors équilibre

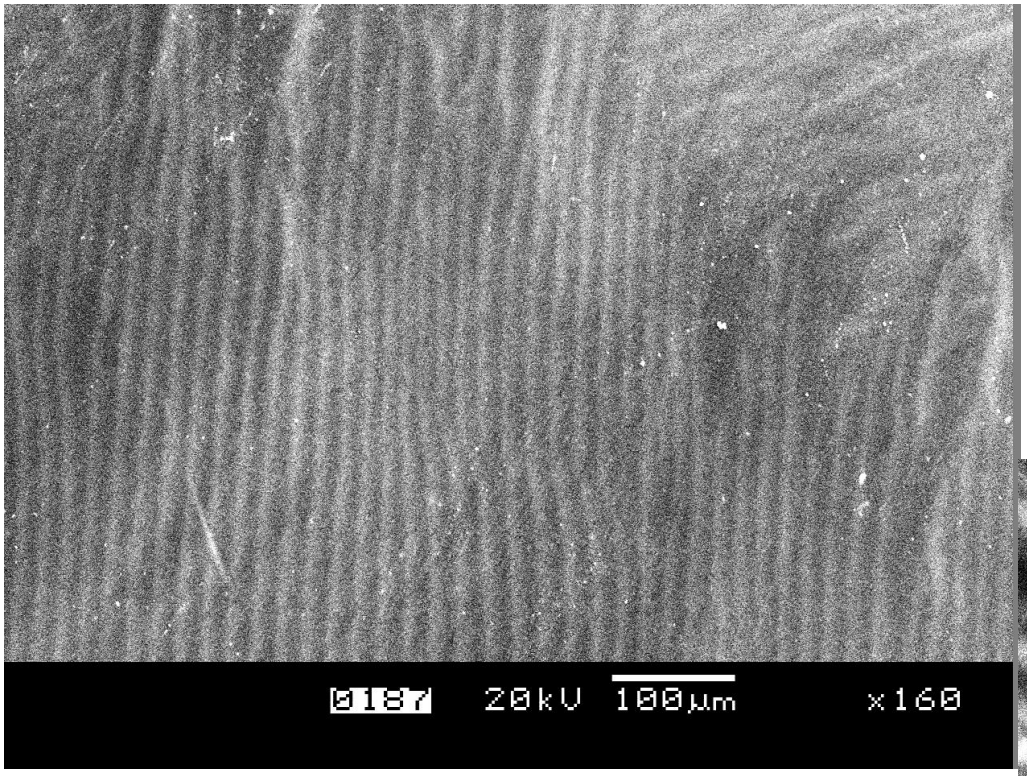


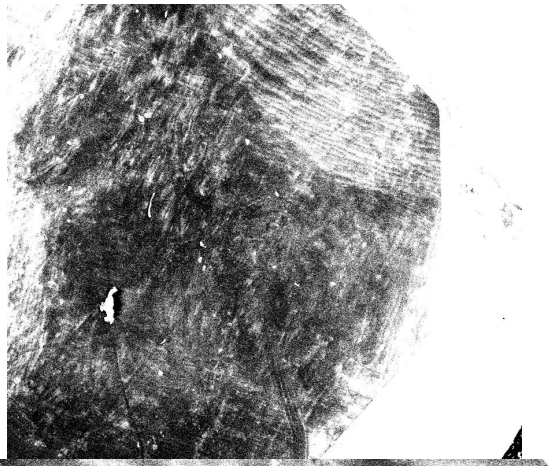


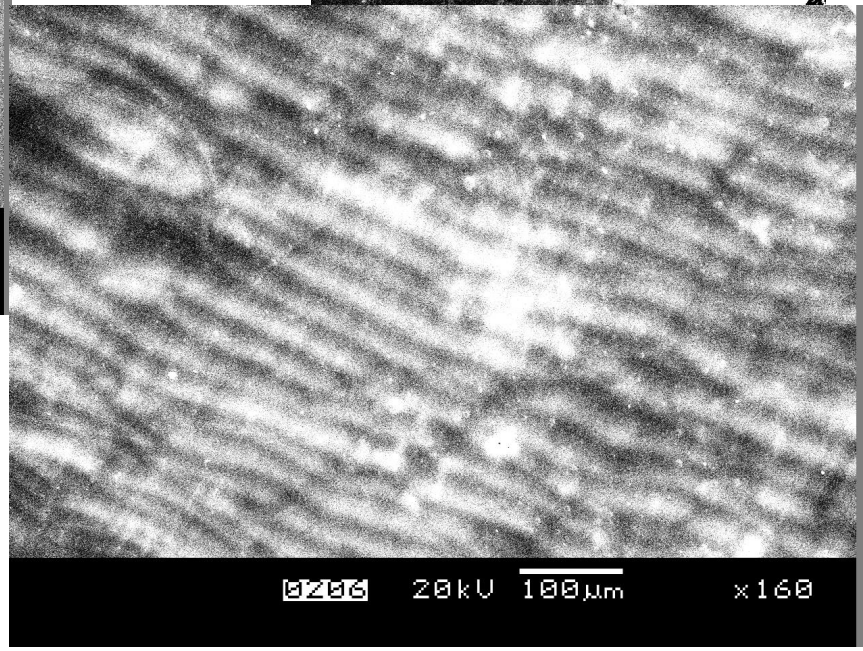


Identification

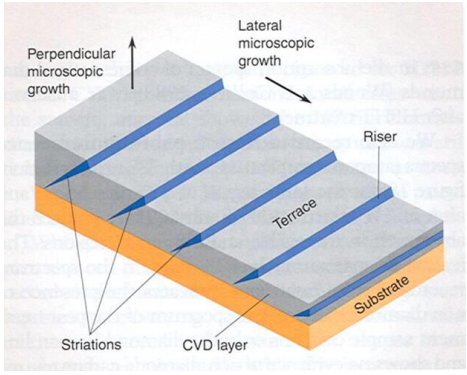
Cathodoluminescence (MEB Nantes)







0.48 ct CVD Incolore

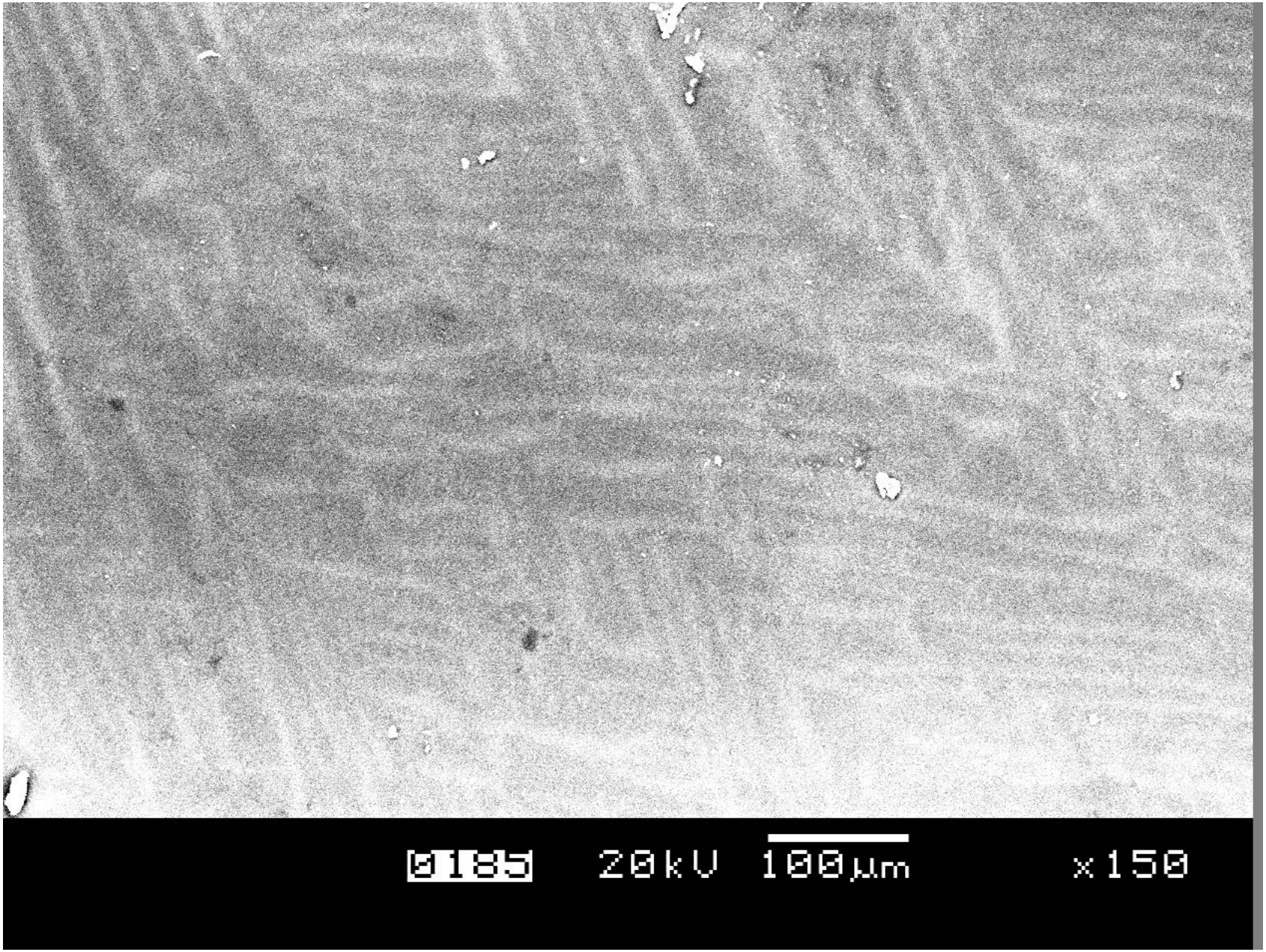


0.46 ct CVD Incolore

CVD incolores

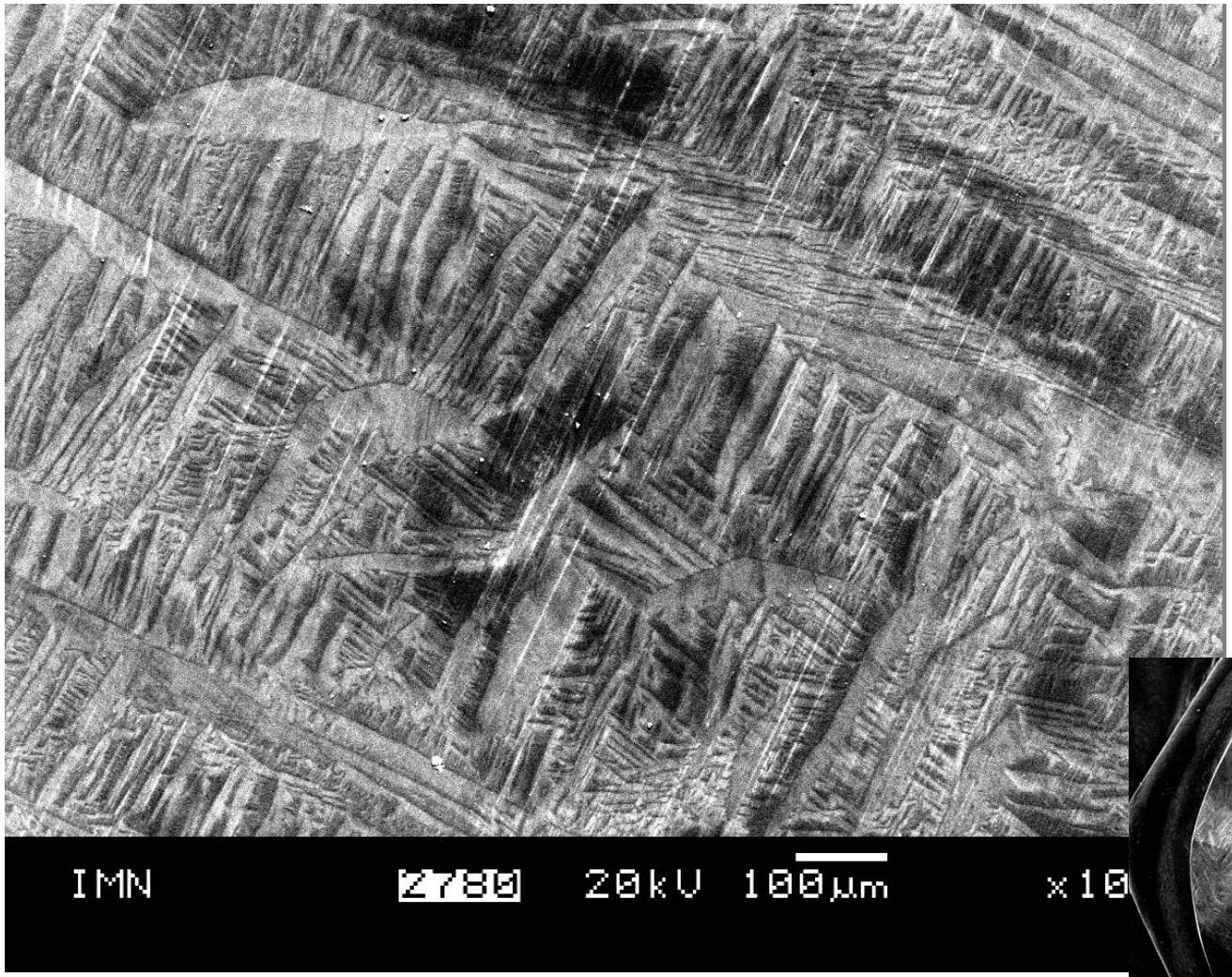
« Step flow growth »

zèbrures



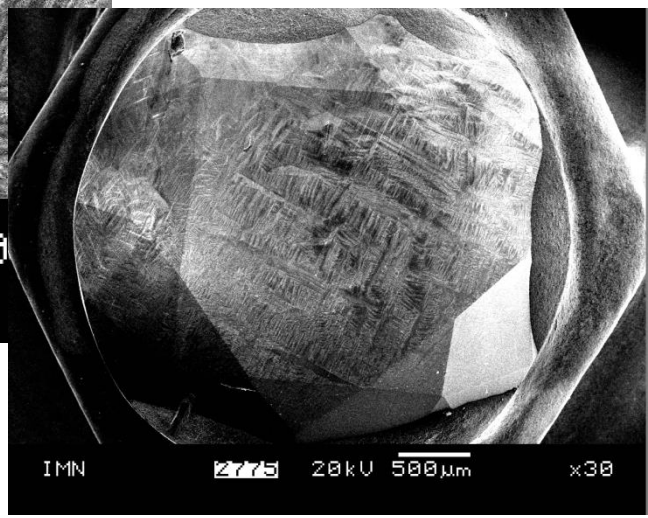
O.45 CVD CL 20KeV

Retour aux naturels: quelques monstres

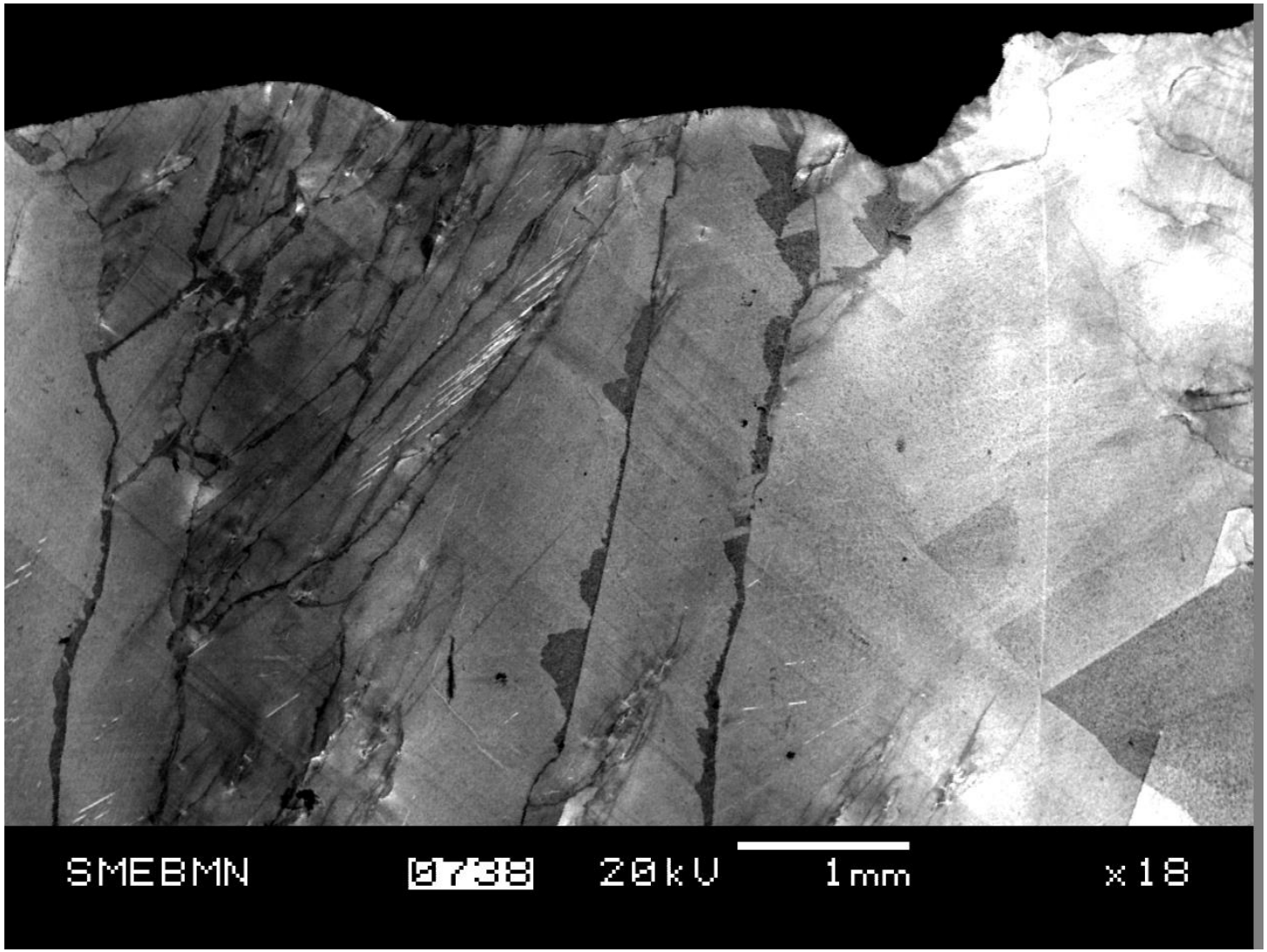


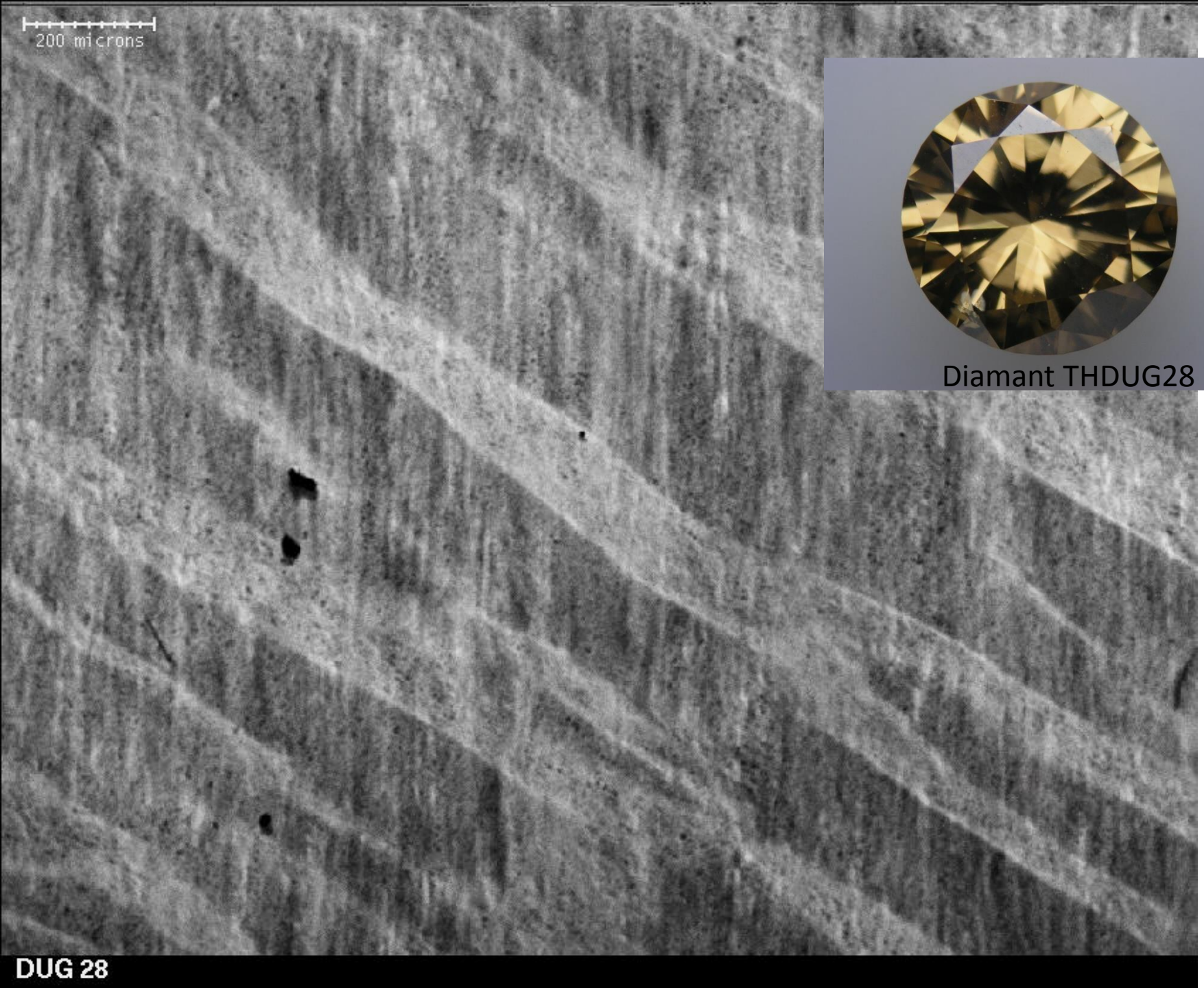
TH2-333 S1

dendrites



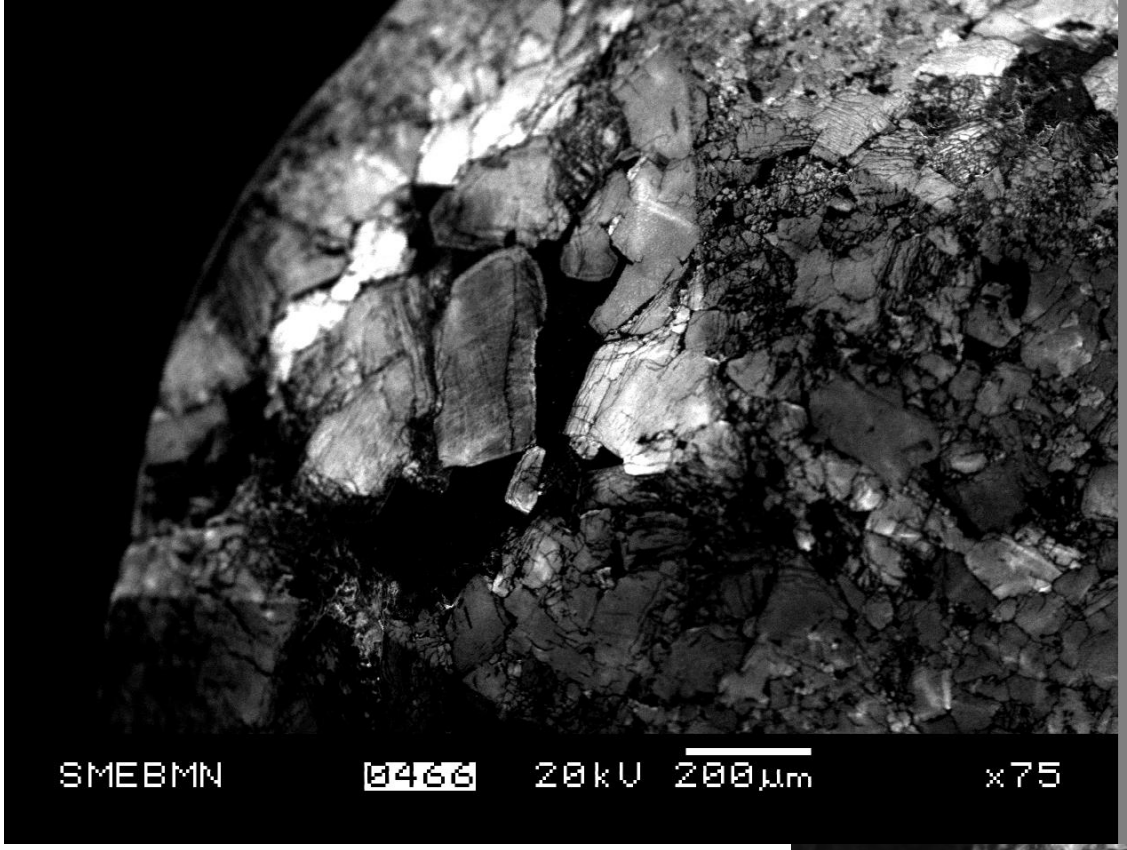
Des diamants brisés, recollés

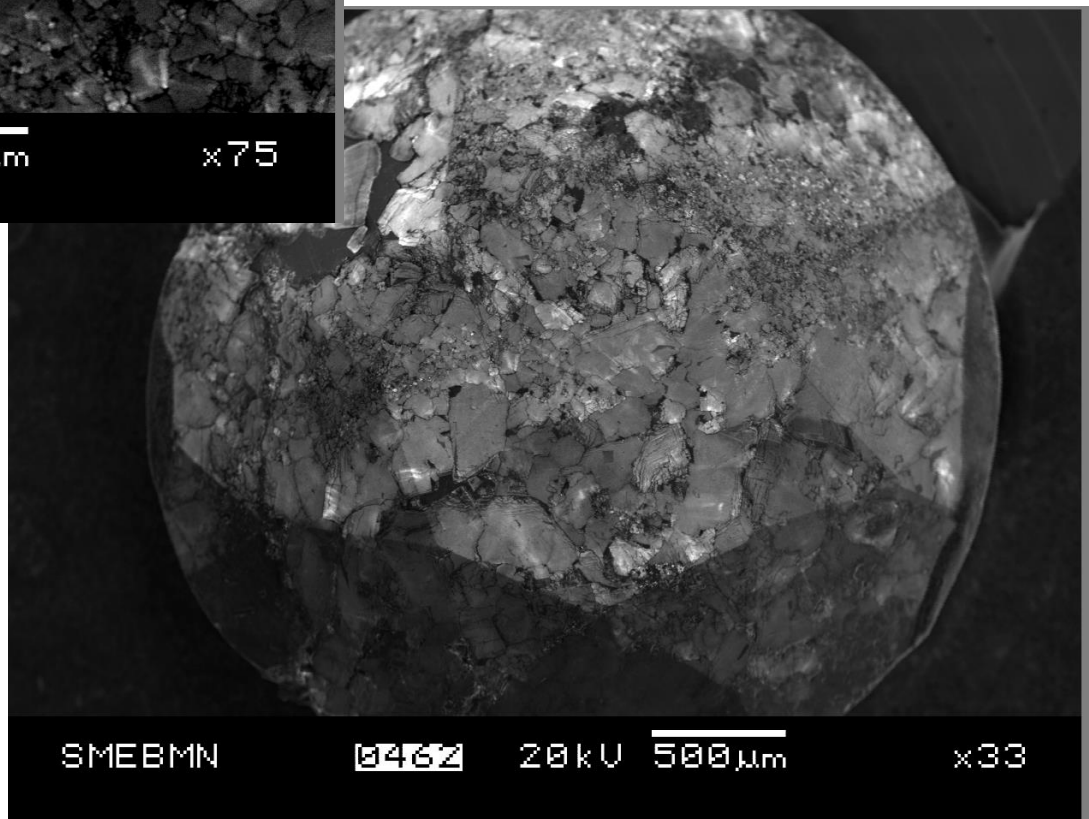


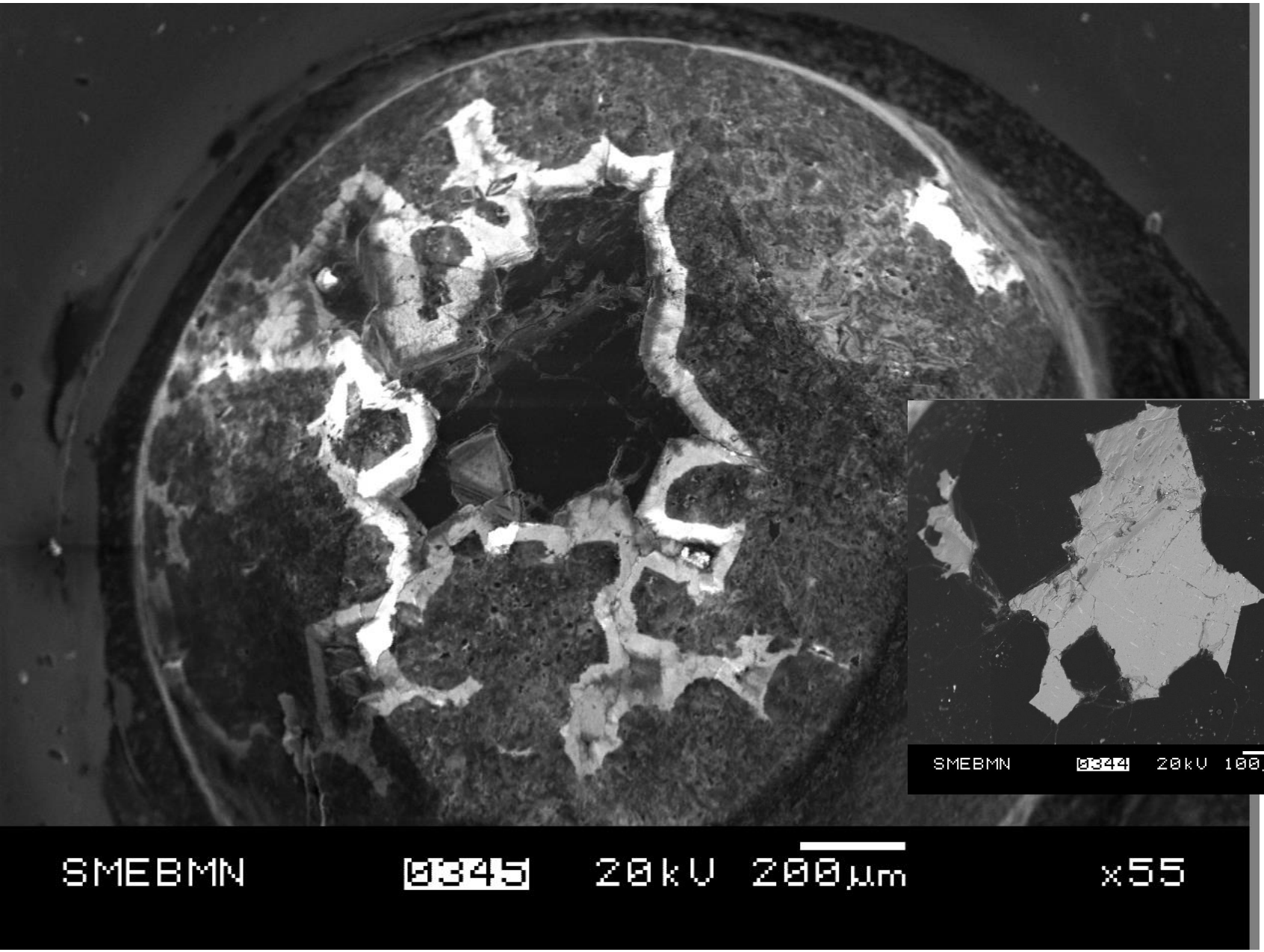


Diamant THDUG28

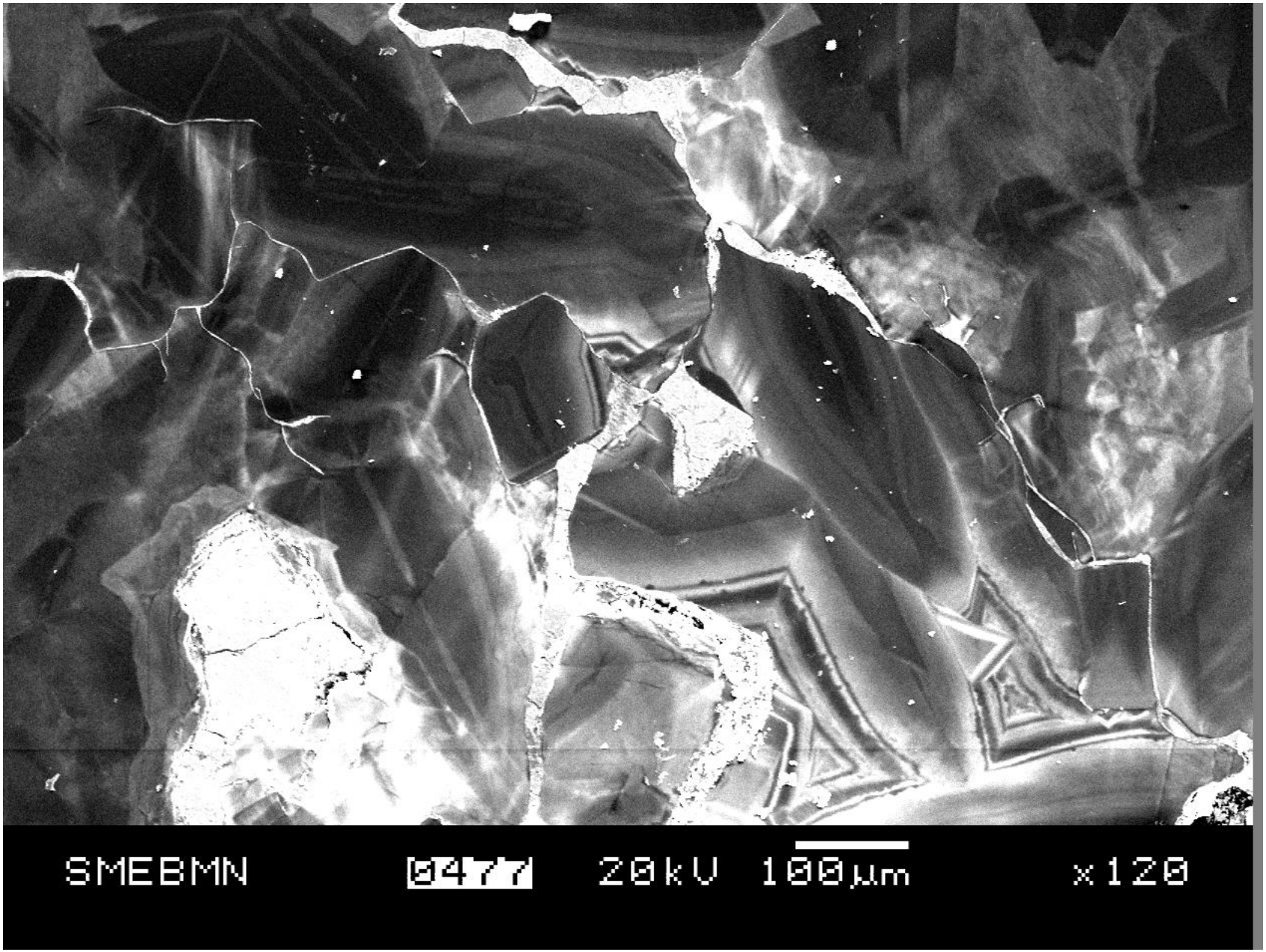
1033

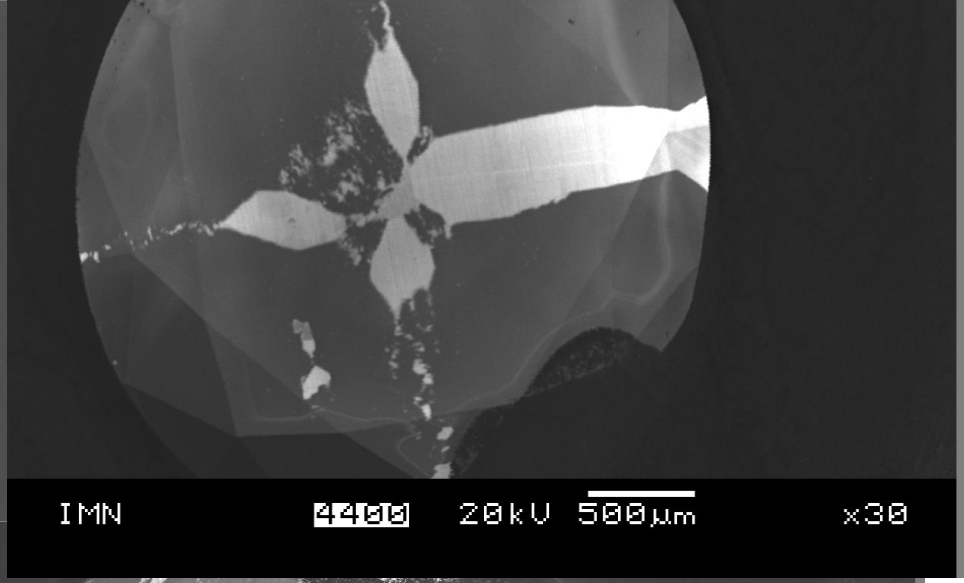


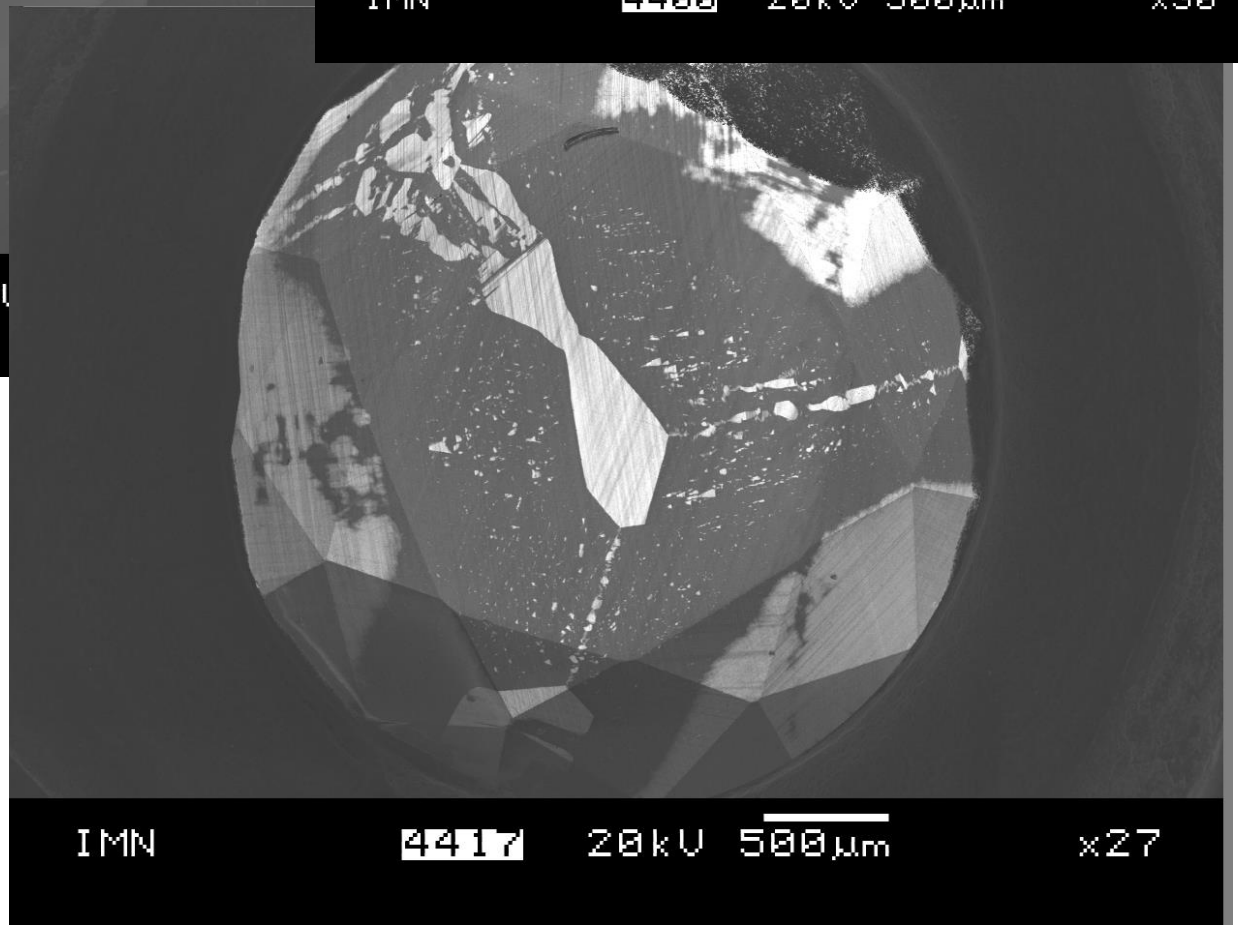




1027 Rutile TiO2


SMEBMN
0477
20kV
100µm
x120

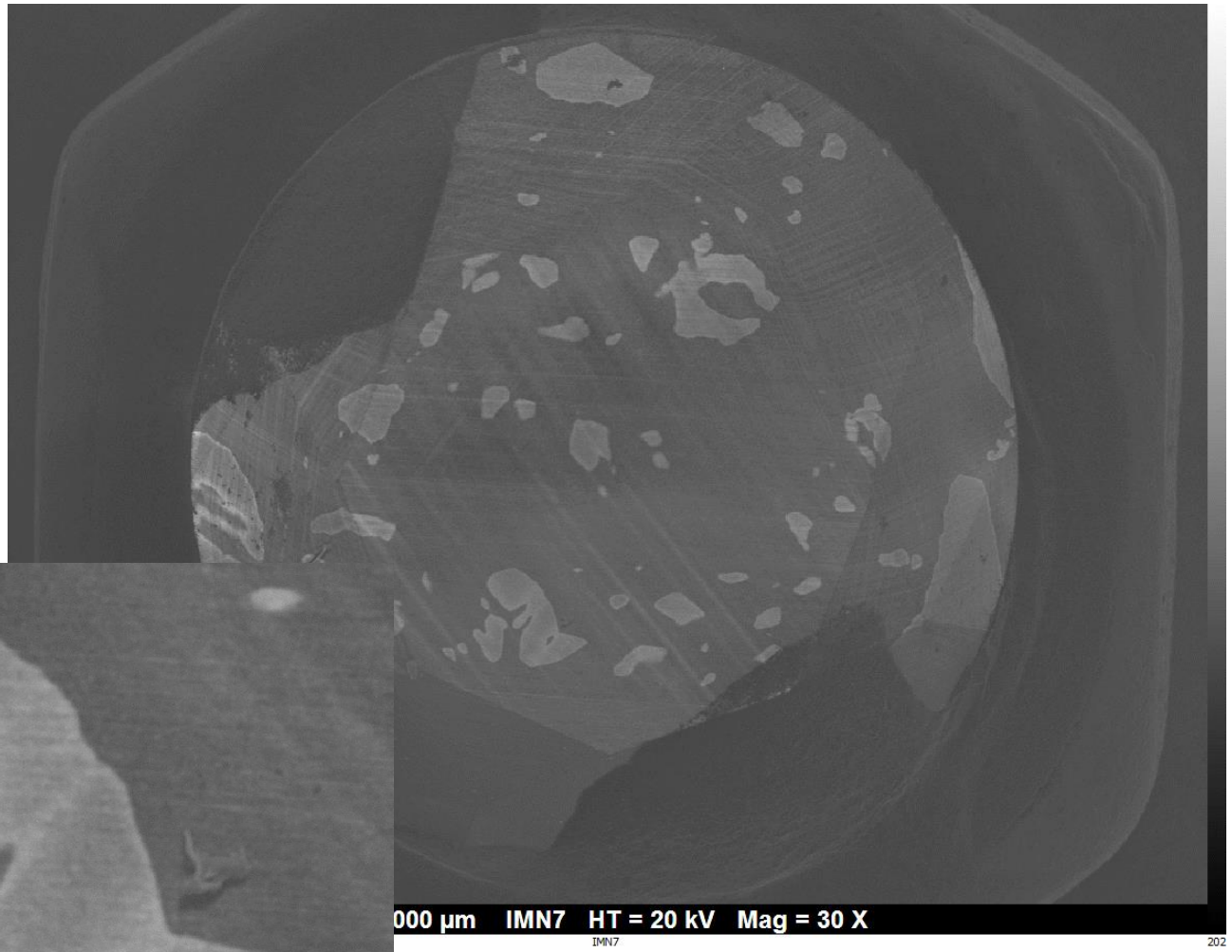


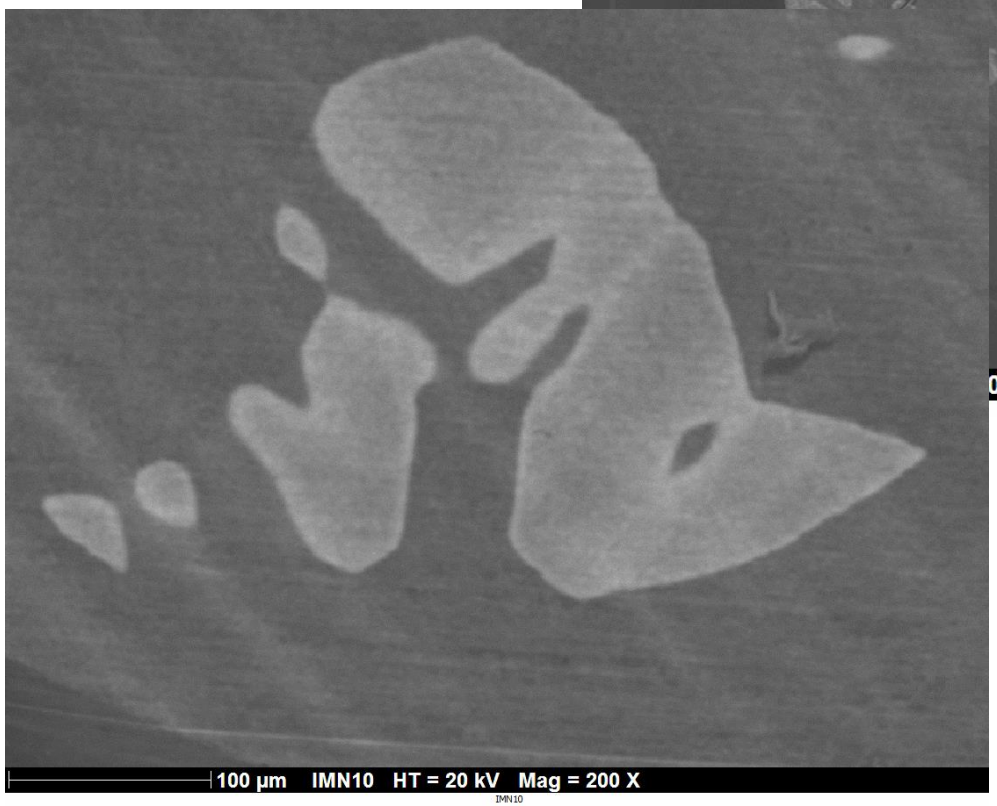


Des (petites) faces du cube

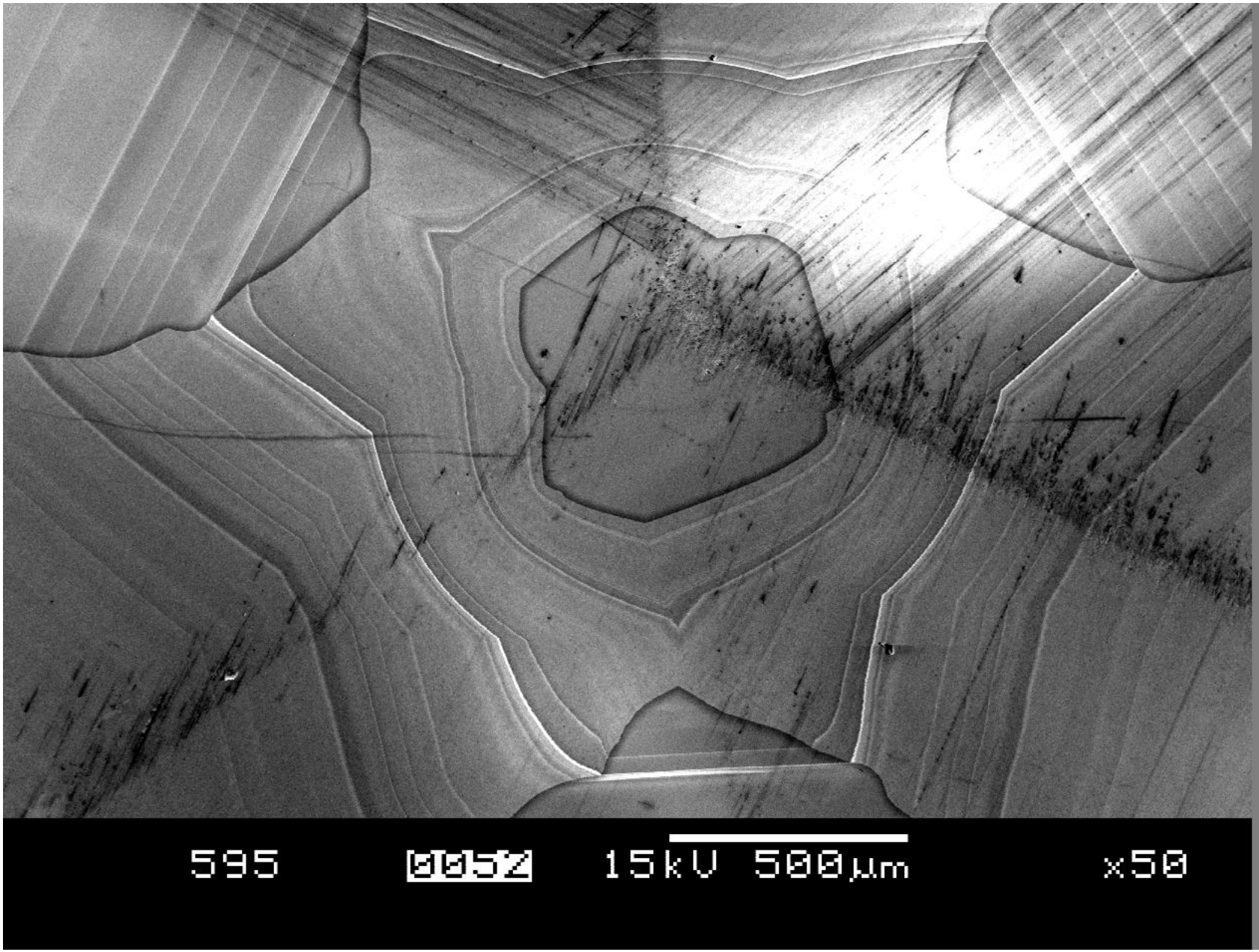
TH 2-339 Olive

Intercroissance poecilitique






That's all Folks!


595
0052
15kV 500µm
x50