РАЗРАБОТКА СПЕЦИАЛЬНОГО КУРСА ПО ИЗУЧЕНИЮ АЛМАЗА ДЛЯ МЕЖДУНАРОДНЫХ СТУДЕНТОВ

Марина Алексеевна Федотова, к.т.н., доцент кафедры технологии обработки драгоценных камней и металлов ФТИ СВФУ им.М.К.Аммосова, г.Якутск

"The knowledge of the world is a decoration and food of human minds".

Leonardo da Vinci


The Republic of Sakha (Yakutia)

23 августа 1956 г.
2 апреля 2010

СЕВЕРО-ВОСТОЧНЫЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ ИМ.М.К.АММОСОВА

6 научно-исследовательских институтов, 13 институтов, 5 факультетов, 3 филиала - Политехнический институт в г. Мирный, Технический институт в г. Нерюнгри и Чукотский филиал в г. Анадырь, а также 2 колледжа и 1 лицей.

Hager Arturo Tejada Paredes,
John Anderson, Kang Suhwan,
Viktoria Palfinger, Katrin Stieger

Управление международных связей

Vladlen Kugunurov
Phone: +7 (4112)361453
Fax: +7 (4112)361453
e-mail: international@s-vfu.ru

- 20 спецкурсов на английском языке

- Программа по изучению алмаза (Diamond Program)

- Летние школы
(1.Climate Change: the Transformation of Landscapes and Adaptation of the Society;
2.Russian language and culture in Siberia; Cold Lands:
3.Summer field school hosted by department of Northern studies; Information Technologies and Robotics;
4.Taiga forest ecosystem on permafrost: Role of permafrost zone in a global change;
5.Crossroads of Cultures)

- Зимняя школа (Winter in Siberia)

Climate Change: the Transformation of Landscapes and Adaptation of the Society (climate change and associated processes of permafrost landscapes transformation and adaptation of the natives to ongoing natural processes)

Russian language and culture in Siberia

(lectures and seminars on Russian and Indigenous culture in Siberia, language classes, several field trips to the ethnographic open-air museums, extensive cultural program and unique opportunity to see the Lena Pillars – Nature Park in Siberia have recently been added to UNESCO's World Heritage List)

Cold Lands: Summer field school hosted by department of Northern studies (physical geography, human geography, northern studies, resource management, biology, permafrost study)

Information Technologies and Robotics (assembly and programming of robot models using educational robot designers and the aeronautic robots of Glider and Multi-copter types)

Taiga forest ecosystem on permafrost: Role of permafrost zone in a global change

(joint Russian-Japanese educational project of Hokkaido University, Japan and International Educational and Scientific Center for Biogeochemistry and Climatology BEST (Biogeochemistry Educational & Scientific Trainings) of North-Eastern Federal University (IC BEST NEFU), Russia and Institute for Biological Problems of Cryolithozone of Siberian Branch of Russian Academy of Science(IBPC SB RAS), Russia).

Siberian winter school in Yakutsk - languages, cultures and permafrost
(includes outdoor activities and visits to ethnographic museum, open-air Museum of history and traditional architecture, Mammoth museum, Permafrost Institute as well as a trip to Amga village with visiting a Yakut family and acquaintance with traditional beliefs, shamanism etc.)

Scientific International School

Module 1. On understanding Yakutia (Land and People of Yakutia)

Module 2. Innovation (Theory and Practice)

Module 3. Human Dimensions

Профессор Сан Чоль Ан, директор

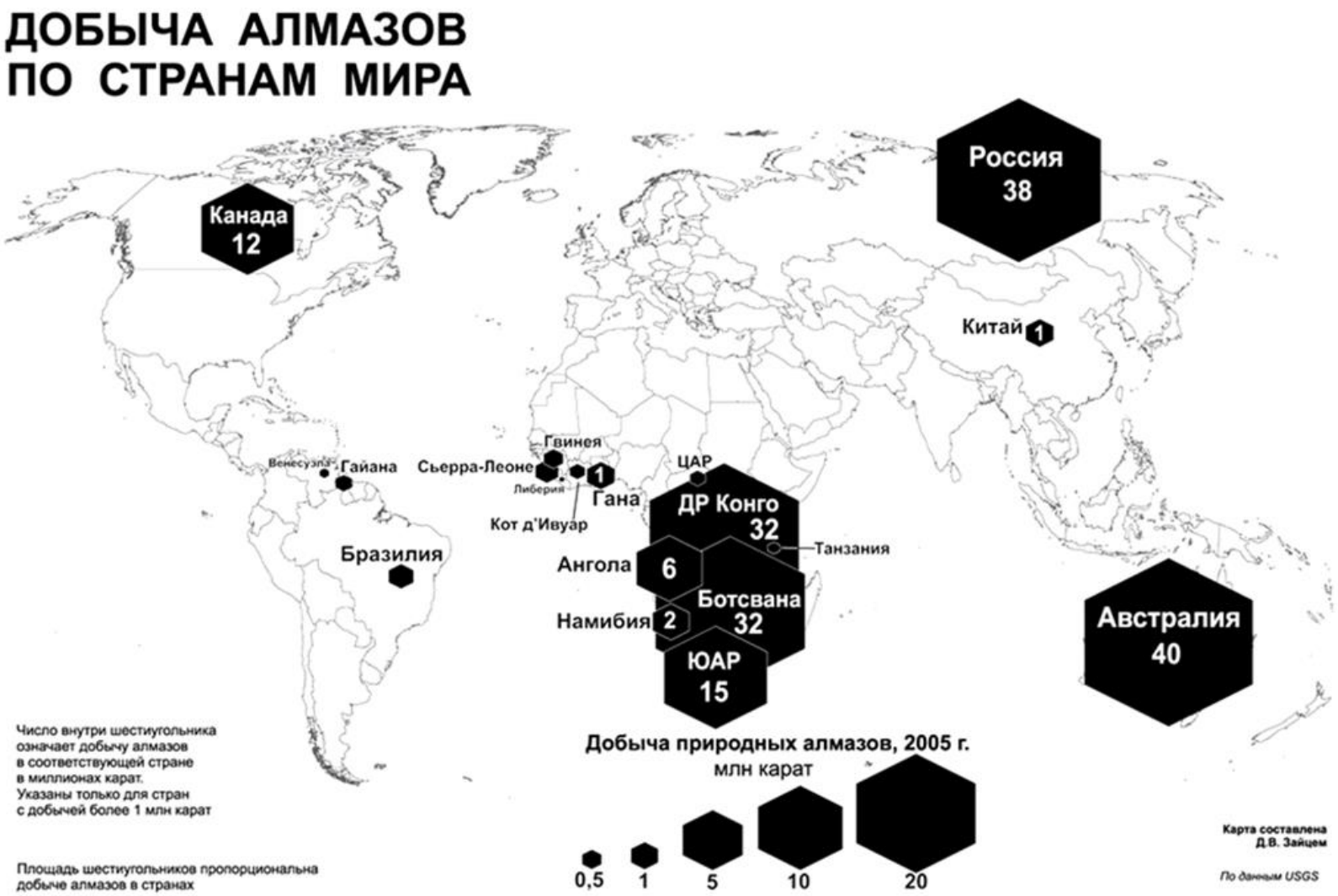
Занятие в МНШ

	Module 1: On understanding Yakutia (Land and People of Yakutia)	**Conference Rm, Library**		**16:00-17:30**
	Topics	Lecturers	Remarks	Thursday
1	Natural resources of Yakutia	Fedotova Marina		Feb. 5
2	History of Yakutia and the people (15:30 ~17:00)	AtlasovaSargylana	Yaroslavskiy museum	Feb 12
3	Anthropology of Yakutia	Struchkova Natalia		Feb.19
4	Languages in the Sakha Republic (Yakutia)	Fedorova Claudia		Feb. 26
5	Academic exchange between NEFU and the World	Kugunurov Vladlen		Mar. 5
6	Social structure of Yakutia	Podoinitsina Irina		Mar. 12
7	Heritage of Booturs	Kang Ducksoo		Mar. 19
8	Climate changes	Popov Vladimir		Mar. 26
9	Contemporary political system in Yakutia and Russia	Sosina Irina		Apr. 2
10	Small business	Filippov Dmitry		Apr. 9
11	Olonkho	Nakhodkina Alina		Apr. 16
12	A diplomat's experience (tentative)	Park Chung Nam	Consul general, ROK	Apr. 23
13	Yakutia and the world	Bozhedonova Anastasiya		Apr. 30
14	TBA			May 7

1. Улучшение языковых компетенций ППС (Программа развития СВФУ)
2. Академическая мобильность преподавателей и сотрудников СВФУ (Программа развития СВФУ)
3. Участие в работе международных летних школ СВФУ
4. Участие в работе Международной научной школы NEFU SIS

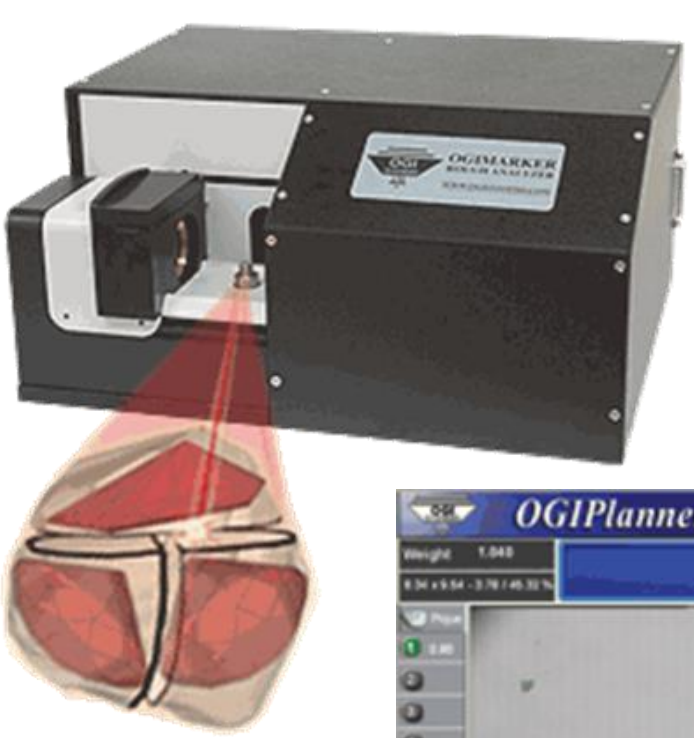
Course/programtitle: Properties of Diamond	Course/programtitle: Properties of Diamond
Main goals and topics of the course/program:	The course is designed for the students interested in engineering, material science and gemology. The lectures are dedicated to consider features of natural diamond. The course includes classes in laboratory and a few excursions. 1. Diamond as a natural resource of Republic of Sakha (Yakutia) 2. Processing of natural diamond rough 3. Phase transformations in carbon 4. Structure and properties of diamond 5. Impurities in diamond 6. Color of diamond 7. Physical classification of diamond 8. Optical properties of diamond 9. Anisotropic birefringence of diamond 10. Diagnostic properties of diamond 11. 4 C-s. Diamond certification 12. The use of diamond.
Name of the department/institution offering the course:	Department of Processing of Gems and Precious Metals Physical-Technical Institute
Name of lecturer/supervisor:	Dr. Marina Alekseevna Fedotova
E-mail of lecturer/supervisor:	fedmar_fti@mail.ru
Number of ECTS-Credits:	2 ECTS-Credits

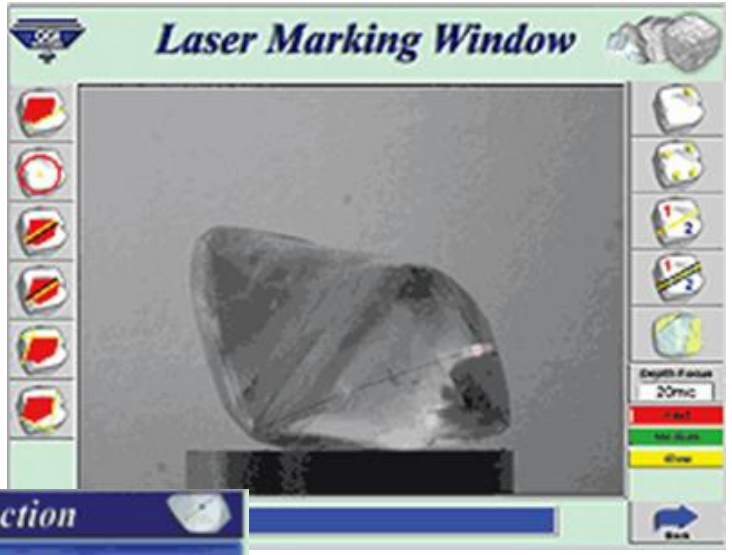
Diamond mining in the world (2012)



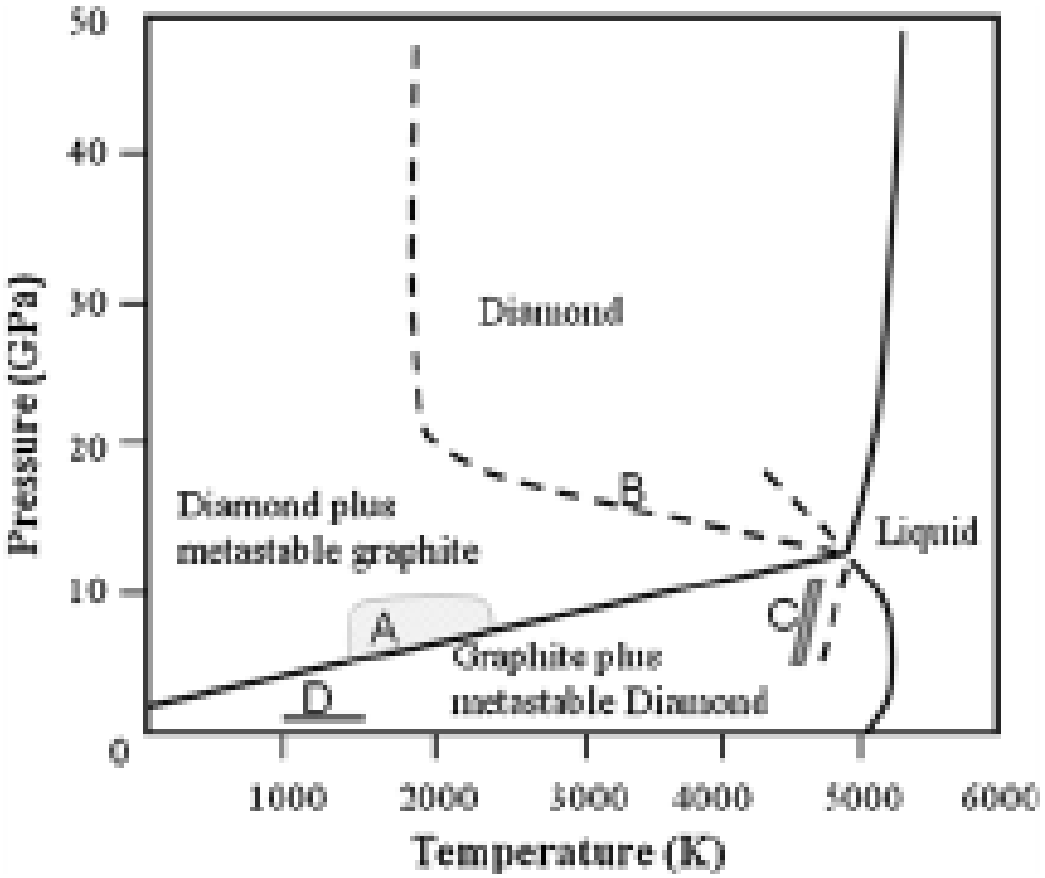
Rough diamond and finished diamond (brilliant)

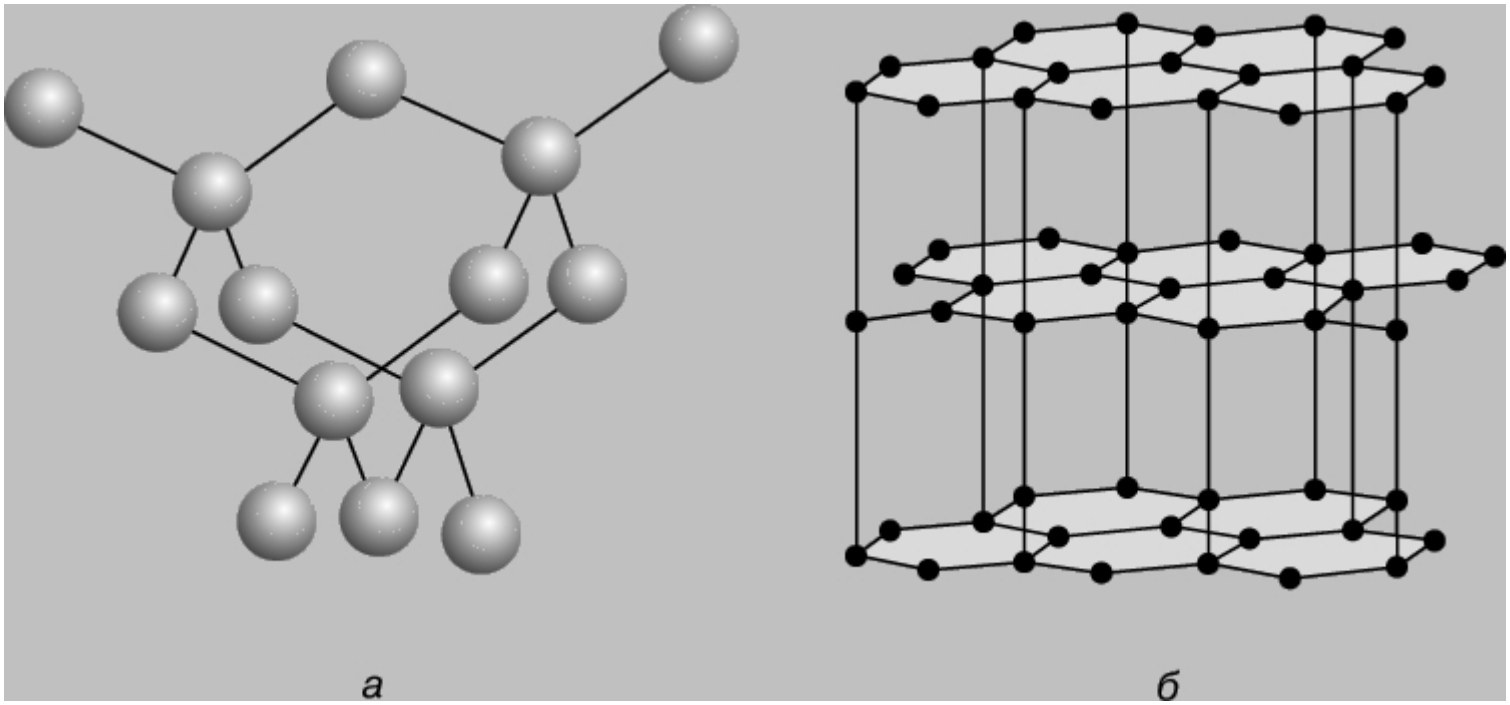
Rough Diamond Laser Marking





2. Cleaving (chopping)

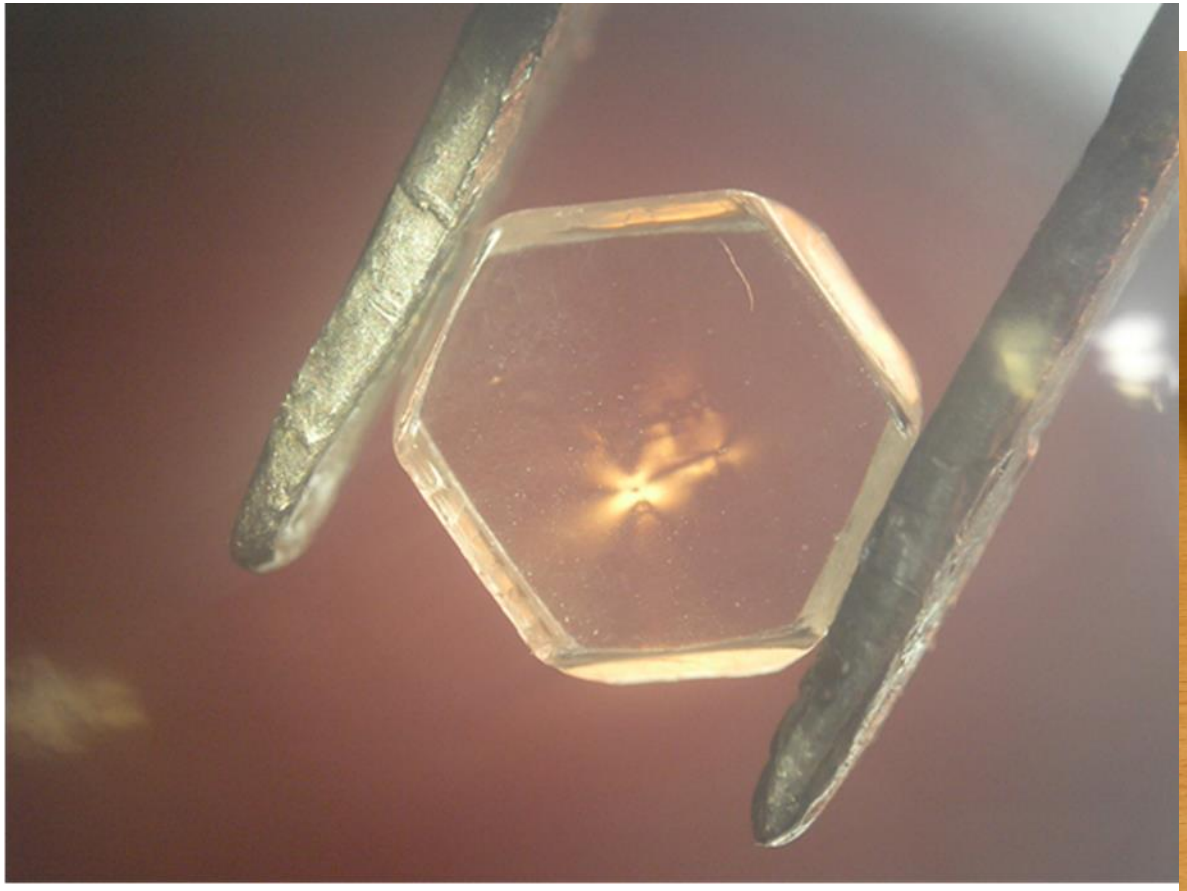

50
40
30
20
10
0
Pressure (GPa)
Diamond
Diamond plus
metastable graphite
B
Liquid
A
C
Graphite plus
metastable Diamond
D
1000
2000
3000
4000
5000
6000
Temperature (K)


а
б

Characteristics of natural diamonds according to diamond type (C.M.Breeding and J.E.Shigley)

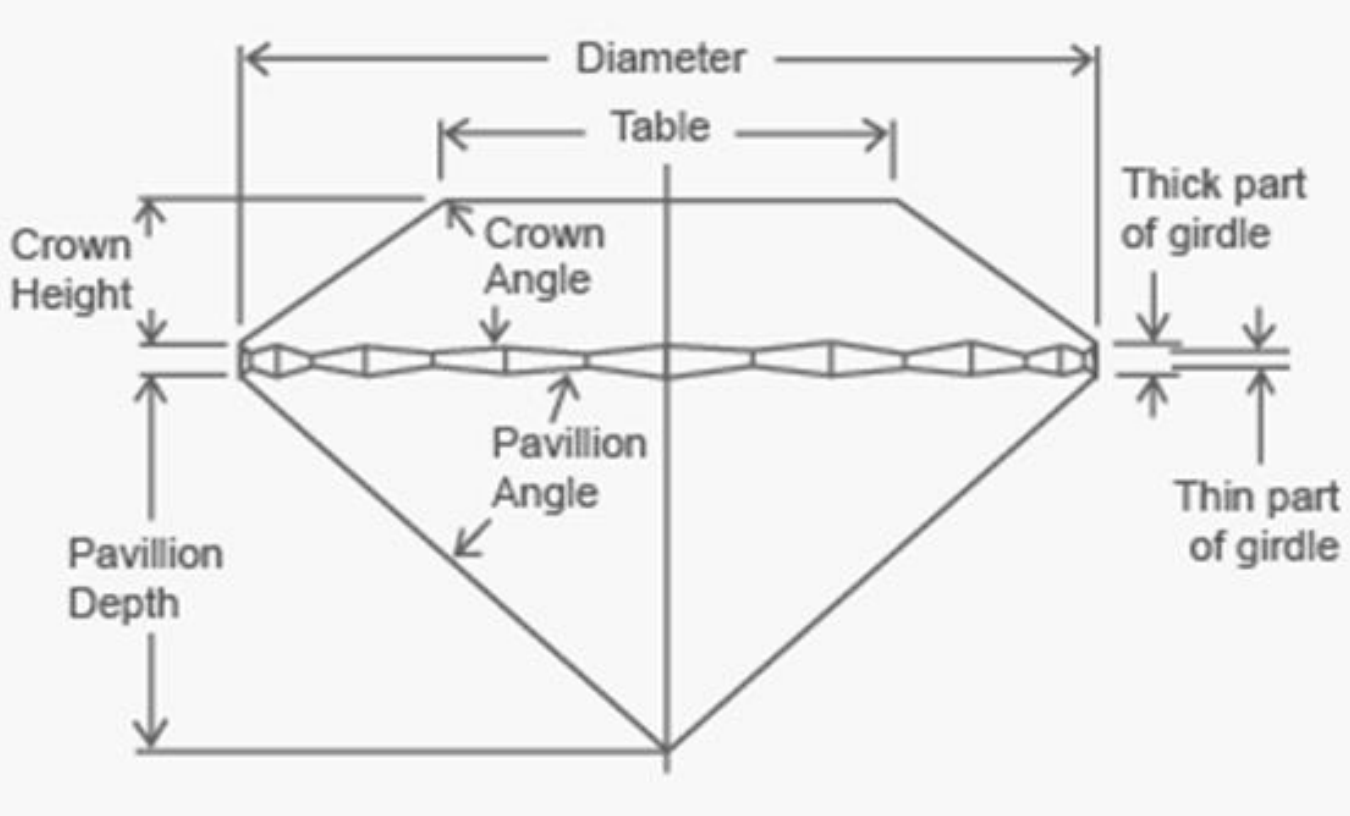
Type	Impurity	Most common colors	FTIR indicators	Inclusions	UV fluorescence		Gemological clue
					LW	SW	
Ia	Nitrogen (aggregated)	Colorless, brown, yellow, pink, orange, green, violet	Aggregated nitrogen (1282, 1175 cm^{-1})	Common, all sorts	Inert, blue, yellow, orange	Inert, blue, yellow, orange	415 nm or "cape" spectrum; opaque to short-wave UV
Ib	Nitrogen (isolated)	Yellow, orange, brown	Isolated single N (1344, 1130 cm^{-1})	Common, clouds, needles	Inert to weak orange	Inert to weak orange	Strong general absorption up to 450 nm; distinctive needle-like inclusion
IIa	None	Colorless, brown, pink	No detectable impurities	Rare, crystals	Inert, blue or orange	Inert, blue or orange	Cross hatched "tatami" strain pattern; transparent to short wave UV
IIb	Boron	Blue, gray	Boron (2458 cm^{-1})	Rare, crystals	Inert to weak blue		Cross hatched "tatami" strain pattern; transparent to short wave UV; electrically conductive; blue or red phosphorescence

Birefringence pattern in natural octahedron flattened diamond crystal (Fedotova)




17
32

The round brilliant cut




ЭПЛ
ЯКУТСКИЕ БРИЛЛИАНТЫ
Эксклюзив от «ЭПЛ. Якутские бриллианты»
Утонченный дизайн, завораживающий изысканностью и приковывающий все взгляды

СПАСИБО!