

Preface

This book is an attempt to put together and critically analyze the available data on diamonds processed by the methods involving high pressure, high temperature annealing—so-called “HPHT treatment.” The commercial aim of HPHT treatment is to change/improve the body color of diamond and hence to increase its price as a gemstone. As any treatment, HPHT treatment must be disclosed by the seller. However, the treatment history of many gem diamonds remains undisclosed and this poses a great danger for potential buyers. At present, the recognition of HPHT-treated diamonds is not a simple task and, as such, it cannot be accomplished by most jewelers selling or buying diamonds. The confident recognition can be done only in the gem labs equipped with specialized and expensive microscopes and spectrometers. The reason for the complexity of recognition of HPHT-treated diamonds is that HPHT treatment mimics very much the process of natural heating of diamonds in earth. Hence the HPHT-treated diamonds may seem very natural. Yet, some specific features of HPHT-treated diamonds and their untreated counterparts do differ and these differences are used for the detection of treatment. In most cases, these differences relate to the internal impurity-defect structure of diamond and they can be recognized only by specialists with solid backgrounds in research. By now, the diamond research community has accumulated a considerable amount of data on the processes of HPHT treatment and the physical and gemological properties of HPHT-treated diamonds. However, this information is scattered over numerous publications, many of which are not readily available. Also, some data published by different authors are controversial. Thus in order to come to a right decision, a critical analysis is required. Keeping all this information together at hand is a challenge for most gemologists and especially for those entering the field. The aim of this book is to help to meet this challenge. Another aim of this book is to give a deeper insight into the HPHT treatment of diamond from the points of view of a scientist, a gemologist, a treatment technologist, and a businessman dealing with HPHT-treated diamonds and to provide the most consistent criteria for practical recognition of HPHT-treated diamonds. Analyzing the data presented in early publications, we have made attempts to interpret it using the new knowledge gained in recent years. This retrospective approach has contributed much to the state of our understanding of HPHT treatment of diamonds.

Although we tried to give the most comprehensive analysis of the existing information, this book is not a manual for quick identification of HPHT-treated diamonds. Rather it is a review showing that the challenge of recognition of HPHT-treated diamonds is much more serious than we may think. In some cases, fortunately rare ones, we have to admit that the present level of our knowledge is not sufficient for the identification of HPHT treatment. However, we hope that this book will benefit those dealing with treated diamonds and help them avoid mistakes when reporting HPHT treatment.

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HPHT-Treated Diamonds

Diamonds Forever

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