Why diamonds appear pink?

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Diamonds appear pink-colored for 2 main reasons, exhibiting either a broad smooth band peaked at 550 nm (type I), or two absorption bands with their zero-phonon lines at 575 and 637 nm (type II), representing nitrogen-vacancy centers NV0 and NV–, respectively. Pink color I is non-homogenous through the crystal, being localized in twin-based dislocation planes along 111 and resulting from plastic deformation. This color currently could not be reproduced in natural or synthetic diamonds via physico-chemical treatments. In contrast, less intense pink color II is homogeneous and is attributed to low nitrogen concentrations in diamonds, which are rarely natural, but usually synthetic ones with NV0 and NV–centers. This research was supported by Russian Science Foundation (project No. 21-79-30063).