

## Dichroism of diamond grains by a polarization modulated near field optical setup

Ruggero Micheletto<sup>a)</sup> and Yoichi Kawakami

*Department of Electronic Science, Graduate School of Engineering, Kyoto University, Nishigyo-ku, Katsura, 615-8510 Kyoto, Japan*

Claudio Manfredotti and Yiuri Garino

*Department of Experimental Physics, University of Torino, Via P. Giuria, 1, 10125 Torino, Italy*

Maria Allegrini

*Department of Physics "E. Fermi," University of Pisa, Largo Pontecorvo 3, 56127 Pisa, Italy*

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Diamond grown by chemical vapor deposition (CVD) was investigated using a polarization modulated scanning near field optical microscope. The authors found that the luminescence has spatial inhomogeneities and it is partially polarized. Confined emission shows differences in polarization angle up to 90°. The study reveals a peculiar confined dichroic behavior in CVD materials and suggests that local crystal aggregates play a role in it. © 2006 American Institute of Physics. [DOI: [10.1063/1.2338581](https://doi.org/10.1063/1.2338581)]

Chemical vapor deposited (CVD) diamond is characterized by exceptional mechanical and physical properties such as extremely high Young modulus, large thermal conductivity, very high radiation resistance, high transparency,<sup>1</sup> Di-UV to IR, and various other outstanding properties.<sup>1</sup> Diamond has been considered for numerous industrial applica-

This signal is then filtered by a Polaroid that is mounted on a rotating motor (a modified light-chopper actuator) at a frequency of about  $\omega_r=70$  Hz. Light is then guided to an objective lens (Nikon,  $40\times/0.60$ ) that focalizes on the sample. The light emitted is collected by the near field probe, color filtered at 470 nm, and detected by a photomultiplier