

Session	Poster Presentation
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## On Energy Transfer Processes Between Glass Matrices and Rare-Earth Doped Ions in Various Glass Types

**Petr Kostka**<sup>1,2</sup>, Roman Yatskiv<sup>3</sup>, Jiri Zavadil<sup>1</sup>, Olga Prochazkova<sup>1</sup>, Petar Gladkov<sup>3</sup>, Stanislav Tiagulskyi<sup>3</sup>

<sup>1</sup> Institute of Rock Structure and Mechanics, Czech Academy of Sciences, Czech Republic

<sup>2</sup> University of Chemistry and Technology Prague, Czech Republic

<sup>3</sup> Institute of Photonics and Electronics, Czech Academy of Sciences, Czech Republic

### Biography

2007 University of Chemistry and Technology, Prague and Université de Rennes 1 – Thesis: Special Glasses for Photonics (Ph.D.)

1999 University of Chemistry and Technology, Prague – Chemistry and Technology of Inorganic Material (Ing.) Internships & courses:

10/2024 Autumn School of Electron Microscopy 2024 (Czechia)

09-12/2022 Yildiz Technical University, Istanbul (Turkey)

10-12/2000, 04-07/2001, 10/2003-05/2006 Université de Rennes 1 (France)

Focus:

Preparation and characterization of special glasses, heavy metal oxide glasses,

Characterization of materials – thermal, optical, electrical properties,

Investigation of relationships between the structure and properties of the materials,

Purification of inorganic compounds.

### Abstract

We compare the optical properties of glasses doped with rare-earth ions, focusing on glasses with different phonon energy values, absorption edge positions, and possibly the presence of suitable impurities. The study examines absorption spectra and photoluminescence properties of rare-earth doped pure silica and tellurite glasses, as well as tellurite glasses containing d-elements such as chromium. Using selected glass matrices, we demonstrate that under certain conditions, effective excitation of the embedded rare-earth ions can occur not only through direct absorption of photons at the appropriate energy (corresponding to the RE transition), but also via energy transfer from the excited glass matrix in the vicinity of the rare-earth ion. This allows the excitation of the doped rare-earth ions over a broad range of wavelengths.

