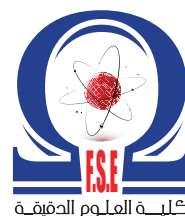




الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي
جامعة قسنطينة 1 – الإخوة منتوري
كلية العلوم الدقيقة



PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
Constantine 1 University – Frères Mentouri
Faculty of Exact Sciences

ANNONCE DE SOUTENANCE



Conformément à la décision n° 07/D3C/2026 datée du 22 Janvier 2026 autorisant la soutenance d'une thèse de doctorat, le Vice-doyennat chargé de la post-graduation, de la recherche scientifique et des relations extérieures, a n n o n c e la soutenance publique d'une thèse de doctorat le :

Judi 12 Février 2026 à 16H00

**Lieu : A la salle de conférences sise au Campus Chaab Erssas
Constantine 1 – Frères Mentouri -**

Filière : P H Y S I Q U E

Spécialité : Physique des matériaux et nano-structures.

Doctorante: **MIHOUBI Besma**

**Sur le thème : « Elaboration et caractérisation des oxydes Pérovskites
obtenus par différentes méthodes ».**

Devant le jury d'examen :

	Nom et prénoms	Grade	Etablissement d'appartenance
Président	BOUKHEIT Nahman	Professeur	Université Constantine1, Frères Mentouri
Directeur de thèse	KARAALI Ahcène	Professeur	Université Constantine1, Frères Mentouri
Examineurs	BOUDINE Boubekur	Professeur	Université Constantine1, Frères Mentouri
	LAIDOUZI Mouloud	Professeur	Ecole Nationale Supérieure Assia Djebbar
	TELIA Azzedine	Professeur	Université Larbi Ben M'hidi – Oum el Bouaghi
	ZAABAT Mourad	Professeur	Université Larbi Ben M'hidi – Oum el Bouaghi

A b s t r a c t

In this thesis, nanocrystalline CaTiO_3 powders were produced using the Sol-Gel method, which is recognized for its efficiency and low cost. The material was doped with Mg^{2+} ions (10 mol%) and co-doped with different proportions of Mn^{2+} ions (0, 2, 4, 6, 8, and 10 mol %). The powders obtained were calcined at 900°C for 3 hours to ensure crystallization of the compound.

The nanopowders obtained were studied using several characterization techniques: X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Raman spectroscopy, X-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM) coupled with EDX analysis, BET analysis, UV-visible spectroscopy, and differential scanning calorimetry (DSC). These nanopowders have also been evaluated for their potential as photocatalysts.

The results indicate that all diffraction peaks correspond to the orthorhombic phase of CaTiO_3 , with no formation of secondary phases. The size of the crystallites, influenced by the doping percentage, was estimated to be between 25 and 34 nm using the Debye-Scherrer formula. In addition, it was found that an increase in dopant concentration reduces the band gap energy by introducing new electronic levels into the band structure. The sample doped with 10 mol% Mg^{2+} and co-doped with 10 mol% Mn^{2+} has the smallest band gap energy of 2.77 eV.

Finally, photocatalysis tests show that the sample doped with Mg^{2+} (10 mol%) and co-doped with Mn^{2+} (10 mol%) exhibits the best photocatalytic activity for the degradation of a crystal violet dye in aqueous solution under UV irradiation.