



US 20220399873A1

(19) **United States**

(12) **Patent Application Publication**
HORI

(10) **Pub. No.: US 2022/0399873 A1**

(43) **Pub. Date: Dec. 15, 2022**

(54) **COMPOSITE SUBSTRATE AND METHOD
OF PRODUCING COMPOSITE SUBSTRATE**

(30) **Foreign Application Priority Data**

Jun. 9, 2021 (JP) 2021-096834

(71) Applicant: **NGK Insulators, Ltd.**, Nagoya-City
(JP)

Publication Classification

(72) Inventor: **Yuji HORI**, Owariasahi-City (JP)

(51) **Int. Cl.**
H03H 9/02 (2006.01)
H01L 41/37 (2006.01)

(73) Assignee: **NGK Insulators, Ltd.**, Nagoya-City
(JP)

(52) **U.S. Cl.**
CPC **H03H 9/02574** (2013.01); **H01L 41/37**
(2013.01)

(21) Appl. No.: **17/818,074**

(22) Filed: **Aug. 8, 2022**

(57) **ABSTRACT**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2022/
000889, filed on Jan. 13, 2022.

A composite substrate includes in this order: a support
substrate; an intermediate layer; and a piezoelectric layer,
wherein the intermediate layer contains bubbles.

