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(19) **United States**(12) **Patent Application Publication****Kim et al.**(10) **Pub. No.: US 2023/0230843 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **WET ETCHING METHOD AND METHOD OF FABRICATING SEMICONDUCTOR DEVICE BY USING THE SAME**(52) **U.S. CL.**CPC .. *H01L 21/31111* (2013.01); *H01L 29/66666* (2013.01); *H10B 80/00* (2023.02)(71) Applicant: **Samsung Electronics Co., Ltd.**,
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ABSTRACT(72) Inventors: **Taeheon Kim**, Busan (KR);
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A wet etching method includes: providing a structure including an etching target film into a process bath containing a first etching solution having a first phosphoric acid concentration; performing a first etching process for etching the etching target film with the first etching solution in the process bath; providing a second etching solution having a second phosphoric acid concentration different from the first phosphoric acid concentration by changing a phosphoric acid concentration in the first etching solution; performing a second etching process for etching the etching target film with the second etching solution in the process bath; providing a third etching solution having a third phosphoric acid concentration different from the first and second phosphoric acid concentrations by changing a phosphoric acid concentration in the second etching solution; and performing a third etching process for etching the etching target film with the third etching solution in the process bath.

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