UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 26, 2005

Novoste Corporation

(Exact name of registrant as specified in its charter)

Florida (State or other jurisdiction of incorporation)

0-20727 (Commission File Number) 59-2787476 (IRS Employer Identification No.)

4350 International Blvd.

30093

Norcross, GA (Address of principal executive offices)

(Zip Code)

Registrant s telephone number, including area code: (770) 717-0904

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- " Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- " Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- " Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- " Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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Item 1.02. Termination of a Material Definitive Agreement.

On September 26, 2005, Novoste Corporation (the Company) terminated the Agreement and Plan of Merger by and among the Company, ONIA Acquisition Corp. and ONI Medical Systems, Inc., dated May 18, 2005, after the Company s shareholders, at a reconvened special meeting of shareholders in lieu of an annual meeting, failed to approve the issuance of shares of the Company s common stock necessary to complete the merger.

Item 9.01. Financial Statements and Exhibits.

- (d) Exhibits
 - 99.1 Press Release, dated September 26, 2005

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

NOVOSTE CORPORATION

By: /s/ Daniel G. Hall Daniel G. Hall

Vice President, Secretary and General

Counsel

Date: October 4, 2005

EXHIBIT INDEX

99.1 Press Release, dated September 26, 2005