

A Combined PET and X-Ray CT Tomograph for Clinical Use

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DESCRIPTIVE TITLE OF INVENTION:

A Combined PET and X-Ray CT Tomograph for Clinical Use

Inventor(s)

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34Y

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INVENTION DEVELOPMENT AND DESCRIPTION:

1. Development of Invention:

<u>Item</u>	<u>Date</u>	<u>Place</u>	<u>Identify Corroborating Persons Records</u>
a. First Date of Conception	June, 1991	Geneva, Switzerland	
b. First Disclosure to Others	July, 1991	Geneva	
c. First Written Description	January, 1994	Pittsburgh, PA	NIH Study Section
d. Completion of First Model	February, 1998	Knoxville, TN	Thomas Beyer, Larry Byars
e. First Successful Operational Test	February, 1998	Knoxville, TN	Thomas Beyer, Larry Byars

2. List any past or contemplated publication or oral presentation of the invention. Attach copies of any publications, abstracts, etc.

<u>Date</u>	<u>Type of Publication</u>
October, 1998	Medical Physics 25 (10), October 1998;2046-2053
November, 1998	IEEE Medical Imaging Conference, Toronto, Canada
July, 1999	Full manuscript submitted for publication in J. Nucl. Med.

3. Describe the invention, including: a. possible applications; b. novel or unusual features; c. test data; d. advantages over currently available technology.

The primary goal of this work is to develop a new tomograph which has the capability of operating in either X-ray CT or positron tomography (PET) mode. The device will consist of an X-ray CT and two arrays of PET detectors mounted on a single support within the same gantry, and rotate the support to acquire a full projection data set for both imaging modalities. The tomograph will

therefore acquire anatomical and functional images which are accurately coregistered, without the use of external markers or internal landmarks. A secondary objective is to use the CT data to improve the correction of PET data for attenuation and for contamination from scattered photons. By using the CT image in a novel way, low-noise attenuation correction factors for PET can be generated, and by integrating the anatomical information from the CT into recently-developed scatter correction methods, an accurate scatter correction can be obtained.

AND/OR Submit file(s) (Enter the FULL file pathname, including extension, one per area).

4. Provide any additional information here (Publications, etc.), or submit as a file above.

See attached paper presented at the IEEE Medical Imaging Conference in Toronto, Canada, in November, 1998.

5. List any related developments by others. Attach copies of relevant publications by others, if any (or submit as a file above).

None directly pertaining to the combination of PET and CT in a clinical scanner.

SPONSORSHIP OR OTHER SUPPORT:

1. Government related Grant(s)/contract(s) under which developed, if any:

	<u>Sponsor</u>	<u>Grant/Contract No.</u>	<u>Grant/Contract Amount</u>
1	<i>NCI/NIH</i>	<i>1R01CA65856</i>	<i>\$843,713 (Direct costs)</i>
2			
3			
4			

2. Non-Government financial support:

	<u>Sponsor</u>	<u>Type of agreement*</u>	<u>Amount of Support</u>
1	<i>CTI PET Systems</i>	<i>Design Partner</i>	<i>\$800,000 (approximately)</i>
2			
3			

*(Consulting, Research, etc.)

3. Non-University Resources (including biological materials received from others) and facilities used in development (including University-affiliated hospitals or other affiliated entities). Include time period and extent of use:

COMMERCIAL POTENTIAL:

1. List any companies which have expressed an interest or may be interested in licensing the invention for further development and sale:

<u>Company (include address)</u>	<u>Contact Person and Telephone Number</u>
a. <i>CTI PET Systems, 810 Innovation Drive, Knoxville, TN</i>	<i>Dr Ronald Nutt. (423) 966 0072 x 250</i>
b.	
c.	
